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Rail Road News

Communication with the Pacific.

The attention of London merchants and capitalists has again been awakened to the subject of a communication with the Pacific, across some part of the narrow strip of land which unites North and South America. A pamphlet has just been published on the subject by Capt. Liot, colonial superintendent of the West India Royal Mail Steampacket Company. This gentleman in company with Mr. McGeachy, the crown surveyor of Jamaca, examined the Isthmus of Panama in 1845, and then came to the conclusion that the most feasible mode of connecting the two oceans would be by making a Macadamized or wagon road in New-Grenada, from Porto Bello on the Atlantic side, forty miles south of Chagres, to Panama on the Pacific. Capt. Liot estimated the cost—road from 40 to 50 miles in length—at £400,000 or $2,000,000, and he calculated the profits from traffic at from $300,000 to $500,000 a year. He gives the foundation of these calculations in detail. Messrs. Howland & Aspinwall's project of a railroad has now superseded the plan of Captain Liot.

The railroad undertaken by the American capitalists is regarded with intense interest by the English, who conceive that the profits which are sure to accrue, would authorise the construction of another route. The one selected or rather suggested by them, combines the profits of great passenger traffic with the developement of vast natural resources. It is a road from Greyton, at the mouth of the San Juan to Lake Nicaragua, and thence to Realejo in that state, or to the port of Lalinas in Costa Rica. This is almost identical with the route of the New-York and New-Orleans company, in their agreement with the State of Nicaragua to make a canal communication between the two oceans. We foresee that the latter route, which has unusual facilities for navigation, will one day or other be a strong rival to the Charges and Panama railroad.

Hudson River Railroad.

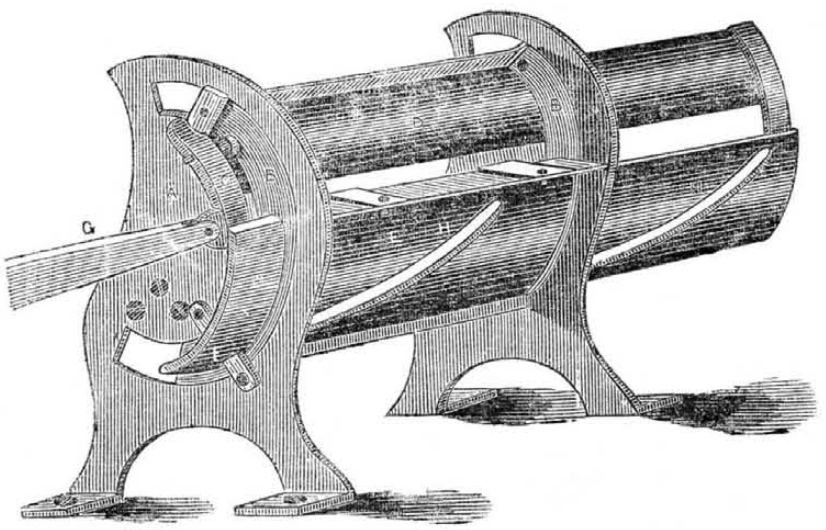
Last week, the first locomotive run from thirty-second street, to Peekskill without stopping. The distance was performed in one hour—40 miles. This was good time—most excellent considering the curves on the road and the first trial.

Direct Road from New York to New Hampshire.

A meeting was held at Hartford, Con., last week, to project measures for the construction of a road to connect the Connecticut River and the Cheshire and Rutland Roads, by a track of about 26 miles. This link would open up a direct communication between New York city, and the interior of New Hampshire and Vermont.

In England, in 1847, 211 persons were killed and 174 injured, out of 54, 854,019 passengers and, in 1848, 202 were killed and 219 injured, out of 57,855,133 passengers.

STAVE CUTTER, JOINTER, SHINGLE AND BARREL HEAD MACHINE.---Figure 1.



This machine is the invention of Mr. Chas. B. Hutchinson, of Waterloo, N. Y., for which a patent is now pending. It embraces three parts. Figure 1 is a perspective view of the Stave Cutter, Figure 2 is a front view of the Shingle Cutter and Barrel Header; and figure 3 is a section of it, showing how the face plate is moved to cut the angle of the shingle. Fig. 4 is a perspective view of the Stave Jointer. The same letters refer to like parts.

Figure 1 is a frame, composed of two upright side standards, A A. There is a table in front (not seen) on which to feed the block to be cut into staves. This table is screwed to each standard inside, and joins them together. In each standard there is a semicircular groove, as indicated by the light spaces. In this groove are nicely fitted sliding guide cheeks, B B, these cheeks move around in the circular grooves. D is the cutting or splitting knife. It is united by ties, C, to a plate, E, which has two curved grooves, H H, cut on it. This plate projects outside of the standards, on each of which there is a guide pin, F, which passes through the grooves, H H. The knife is drawn backwards and forward from side to side. In doing this it cuts the stave out lengthwise, but traversely, also by a slanting cut; for, when the knife is drawn to the one side, it is guided downwards, to cut through the block by the grooves, H, on the plate, E, directing the said plate (and consequently the cutter) circularly, while it is drawn longitudinally.

The cutter, D, and the plate, E, form a frame well fitted in the standard grooves, and combined with the guide cheeks, B. G is a handle to move the cutter. It will be evident to every person that this machine embraces a beautiful principle for cutting out the staves.

Figure 2.

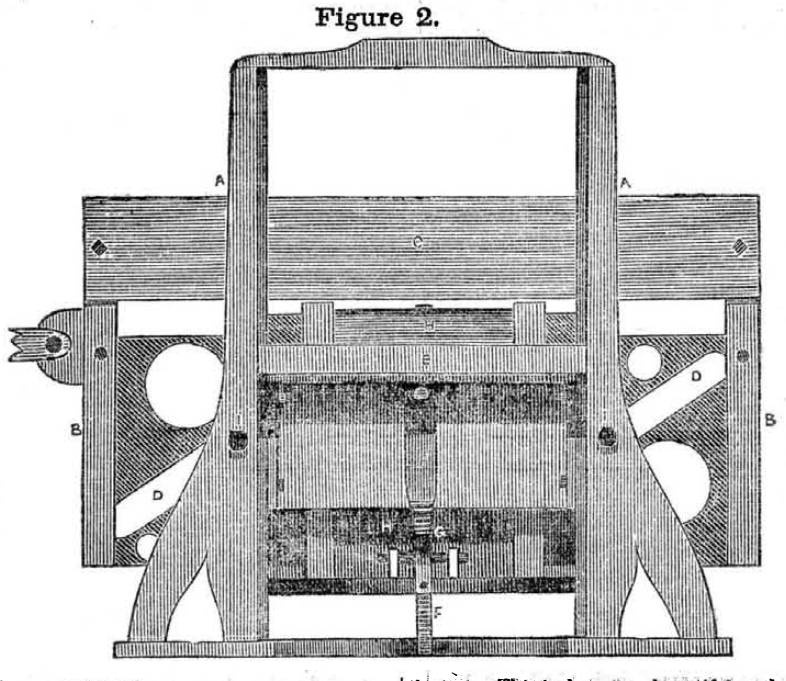


Fig. 2 embraces the same principle in cutting shingles and barrel heads, only the knife or cutter is not directed circularly but to the one side and downwards. A A are the upright standards; C is the knife. It is united by ties or screws to the plate B. This plate has two angle grooves, D D, cut on it, through which pass the guide pins, H, on the standards. The knife and plate are guided in side grooves (not seen, in the standards. When the knife is drawn sideways it is also guided by the grooves D, on the plate, to cut downwards at the same time. E is the table on which the blocks are placed to be cut; and H is the face plate against which they are pressed to guide the angle of the cut. This is done in a beautiful and simple manner, as better represented by fig. 3. F is a stationary ratched rod, secured on the floor. A small circular frame is secured at the lower end of the face plate, H, the which plate moves up and down, and is connected to a gate behind it, which slides up and down in the side grooves of the standards. On this circular frame is a small ratchet pinion, G, fixed on a short axis. This pinion has a projection or cam on each side, placed reversely to one another. When the knife is brought down, this pinion does not take into the ratchet rod, F, but only when it is raised up, and thus alternatety the cams act upon the two cheek studs, A A changing the position of the face plate, H, to the block, every new cut. The studs, AA, are screws and can be thrown out of gear at any time, to cut barrel heads, the corners of which may be sawed off afterwards.

Fig. 3.

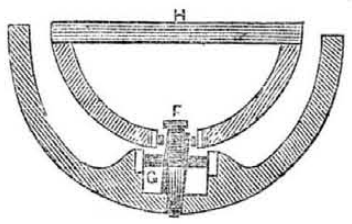
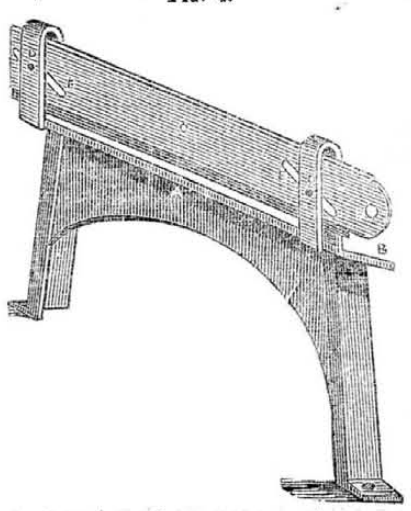


Fig. 4, the jointer, is just a table to feed in the staves, from fig. 1, to joint them. A is the standard; B is the feed table. The knife, C, cuts lengthwise and downwards, like the shingle knife. E E are the grooves in it, and D D are guide pins to direct its action downwards, when it is drawn to one side, to give the slanting cut.

Fig. 4.



As it regards the principle upon which this machine cuts, there can be no doubt its utility is beyond question. More information about rights, &c., may be obtained by letter (*p. p.*) addressed to the ingenious inventor.

Lighthouse Bird Trap.

We have heard, says the editor of the Portsmouth (N. H.) Journal, many strange stories about the great number of birds which, bewildered by the bright glare of the lamp on Boon Island, fly against the iron railing which surrounds the light, with such force as to kill themselves. We have heard that some mornings several bushels of dead birds have been gathered up around the light, which had fallen victims to the brilliancy of the previous night.

A few days since we inquired of Capt. Thompson, the keeper, whether there was any truth in the stories; he said that such devastation was not of daily occurrence, but a frequently a large number of dead birds were found around the light house. One morning, about three months since, there was a rather larger number than common. His assistant, Mr. Fletcher, gathered in one heap three hundred and sixteen birds which had fallen the previous night. They were in this heap at least twenty varieties of land and sea birds—some of beautiful plumage, such as he had never seen before. Walking around the light, Capt. Thompson saw many more which would have added largely to the heap.

There is now and has been a great drouth in Nova Scotia, by which the crops have suffered severely. It is doubtful if the farmers there, will be able to support their cattle during the coming winter.

A letter from Cairo states that a French engineer has just discovered a vein of coal near the Nile, in Upper Egypt.

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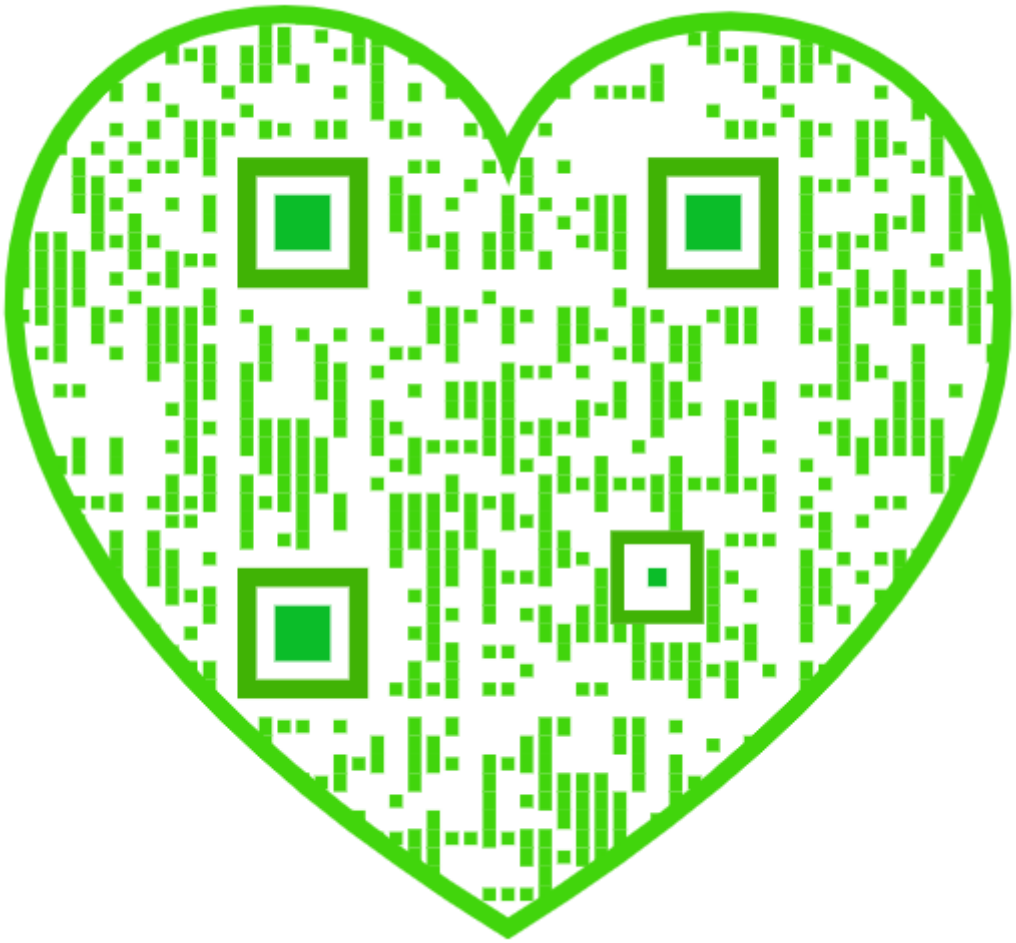

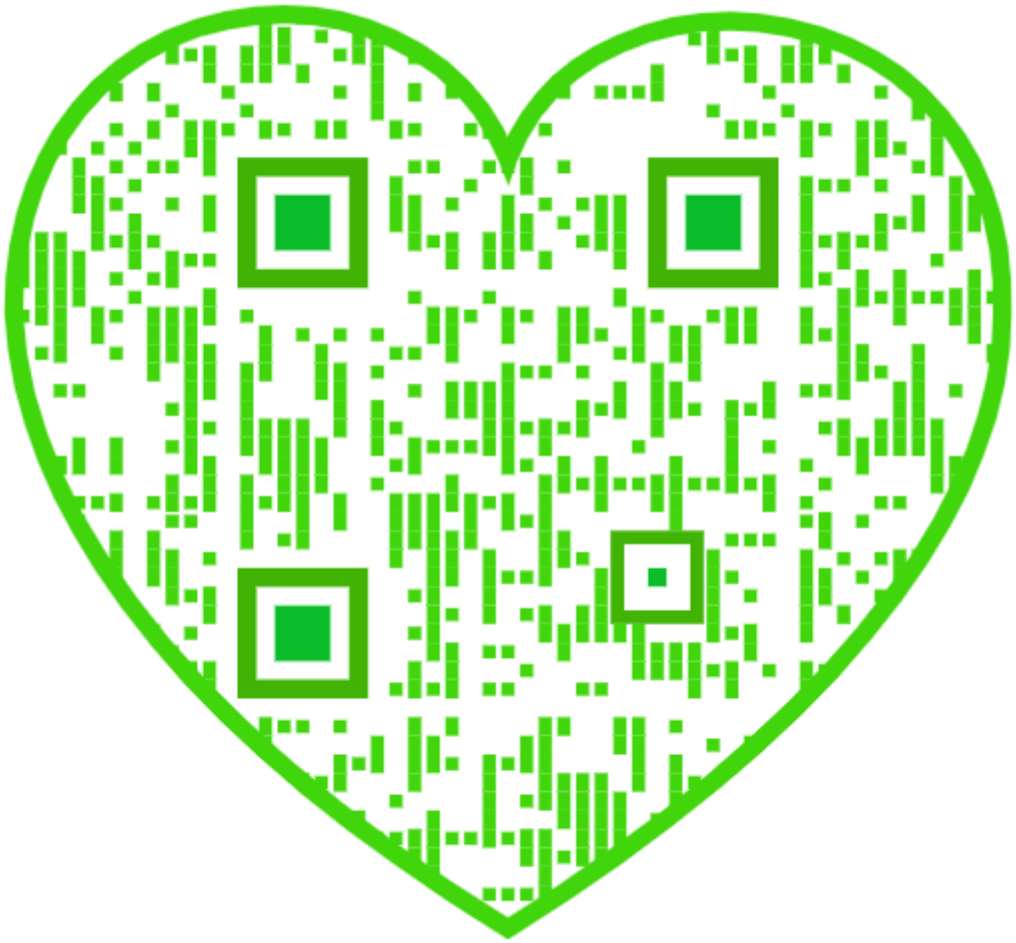

Miscellaneous.

American Cast Steel.

We would call the attention of those interested in cast steel, to the advertisement of Daniel Adee, of this city. We have examined his steel, and do not hesitate in pronouncing it fully equal to the best English manufacture. We have also the assurance of this fact from parties in this city who have used it. We are glad of this, and hope our manufacturers will not overlook the importance of patronizing the American article. Mr. Adee is an enterprising man and deserves a liberal encouragement.

Cannalton.

In the State of Indiana, on the Ohio River, is built a vast city (yet in embryo); it has in its vicinity 5000 acres of coal land—the coal of superior quality. Last year 400,000 bushels were mined and sold. A cliff, 300 feet high, near the town, is composed thus:—1st. Limestone, 20 feet; 2d. Congiomerate suitable for furnace hearths, fire beds, mill stones, &c., 36 feet; 3d. Fine sand stone, abundant; 4th. Fire clay, 10 feet. In front of the coal seams are four miles of wharfage and 16 feet water at lowest stage. The site of the town is on a bend of the Ohio, embracing an area of 1000 acres, lying between the river and the coal hills. Lots are offered at very low rates to individuals or companies, on condition of improving. The rent of coal 1 cent per bushel, mining 2 cents. Free stone manufactories can be built at $2,75 per perch. Clay, sand, timber and stone, given free to all who build in this town.

At the last session of the Legislature, twelve charters, of the most liberal character, were obtained for manufacturing establishments on this plan. One cotton mill is building, to contain 10,000 spindles, of stone, 4 stories high, 272 feet by 65. Another, of 2000 spindles. Both mills are erected under the direction of Gen. T. C. James, of Providence.

Wealth of Russia.

Five millions of rubbles were lately transported from the fortress of St. Petersburgh to the depot of the bank, to replenish its resources.—The sum was taken from the vaults of the fortress in the presence of the assistants, of the comptroller of the empire, the members of the Committee of Revision, the delegates from the Bourse, and the foreign commercial *charges d'affaires*, and escorted to the bank by infantry and cavalry. The council of the Bank, in full sitting, and in the presence of the above gentleman, assured themselves that the sum was the same as that taken from the fortress. The act relative to the removal was then signed by all present, and among other things, establishes the fact that there remained in the vaults of the fortress of Peter and Paul, after the removal of the five million roubles, 101,528,595 roubles.

[The above from foreign papers, either makes the Russian, or R. Cobden void of truth.

Chicago Mechanics' Fair.

The third Annual Fair of the Mechanics' Institute of the city of Chicago, Ill., will be held on the second Monday of October next. The following list constitutes some of the premiums to be awarded:—10 gold medals, 25 silver medals, 4 gold pencils, 4 gold pens, 1 silver cup, 1 plated cup, 5 silver pencils, 2 silver butter knives, 4 silver fruit knives, 2 silver table spoons, 4 silver desert spoons, 2 sett of silver teaspoons, several volumes of useful books, diplomas, &c., &c. This Institution, we believe, is a very excellent one and does credit to the city of Chicago.

Adulterated Milk.

A Mr. Rugg, in London, has published a pamphlet on the subject of milk that is used in cities, the product of city fed cows. He says, "the results to those who use such milk are injurious in the extreme.

Cement for Mastic Work.

Mix 50 parts of silicious sand, 50 parts of lime marl, or pulverised brown sand stone and 8 parts of litharge. When the cement is used it is to be ground up with linseed oil.

Gratifying Result of an Interesting Operation.

The New Albany (Ind.) Bulletin has an interesting account of an operation performed by Dr. Sloan, of New Albany, upon the eyes of Rev. N. Hoskins, of Crawford County, Ind., who had been blind from birth. The Bulletin says:

Mr. Hoskins was taken home to Crawford county before the bandages were removed, and when this was done, we are informed by a gentleman residing in that neighborhood, the operation was found to have been eminently successful. He describes the emotions of the patient when suddenly possessed of a scene so novel to him, to be of the most enthuastic description. Things which he had long been acquainted with, through the medium of the other senses, became possessed of a new and surpassing beauty, and roads which he had been used to travel fearlessly when blind, had to be again learned. His wife and children, *whom he had never seen*, his friends, his parishioners, his home, everything endeared, to him, became an unending source of delight and new-born gratification. He had the same confused notions of distance which we see the smallest children manifest, and took the liveliest pleasure in beholding the great variety of colors.—In short he was compelled to *learn* to see in precisely the same manner that the smallest child does, and to him it was an occupation of the most gratifying nature.

Heat Expands Bodies.

This is a universal law, and there are but one or two apparent exceptions. Were there no such thing as heat, liquids and gases could not exist; all matter would be solid. Heat is the cause of bodies becoming fluid; it insinuates itself between the particles of which they are composed, and forces them further apart; if a great degree of heat is applied, the particles are separated so far that they then assume the form of gas. Steam is a familiar example; and the thermometer acts solely on this principle. There are only two or three exceptions to this law, and they are only so in appearance. The principal one is water, which, instead of contracting when cooled down below 32 degrees, expands, when it assumes the form of ice. This is a beautiful provision, since the ice, floating on the water, prevents it parting readily with its heat and thus does not allow our rivers, &c., to become a solid mass of ice, as they otherwise would. The cause of the water expanding, and becoming lighter, when it freezes, is because the crystals of ice have interstices between them, which are filled with air.

Raising Fruit in Russia.

In the intensely cold climate of St. Petersburg, where nearly all our common fruit trees perish under ordinary circumstances, fine crops of apples, plums, and cherries have been obtained, by training the branches on a trellis only about a foot from the ground.—The heavy snows entirely cover them and completely protect them. Large crops of apples have thus been obtained for successive years, even after winters which have destroyed other trees when double-matted. The Green Gage and Orleans plum have ripened before mid-autumn. Morello cherries have borne good crops. When the fruit ripens, it does not bruise in falling.

[Here is certainly a hint to all our fruit growers. Would it not apply to the peach, so that it might be raised in the northern parts of our country, where this delicious fruit, is unknown?

Railway Accident.

A young man named John Herring, of Piermont, a breakman on the New York and Erie Railway Line met with a dreadful accident on Saturday night last, at Sloatsburgh. He was engaged at his duty when he was knocked down by the engine and the entire train of cars passed over his left arm, shattering the bones and mangling the flesh in a most frightful manner. It was a miracle he was not killed for the guard of the engine passed so close to his head as to cut his upper lip and break two of his teeth. On yesterday morning the arm was amputated in this City to which he was brought the night before.

Natural Curiosity.

A short time ago, a horse was brought into a blacksmith shop in Cambridge Mass., to get 5 feet shod. The horse was larger size than usual, but in other respects in no ways remarkable, with the exception of the supernumery foot. This was upon the left hind leg, having its origin upon the inside, just above the fetlock joint, or to speak more exactly, between the larger postern and cannon bones. It had its own tendons for bending and extending the foot, and these motions were effected independently of the natural foot, showing an independently set of muscular fibres also. The foot and hoof were well shaped' but were not more than one-half or two-thirds of the size of the other. It was placed firmly upon the ground in walking, and the shoe, which was well worn showed that the foot did its duty in suporting and moving the animal.

Gov. Marcy's Cane.

At the recent Syracuse Convention, Gov. Marcy sported a heavy walking stick, ivory headed, and gold ferruled, with a socket of brass at the foot. The timber of the cane is from the flag-staff of the National Palace of Mexico, occupied by the Americans Sept. 14, 1847. The socket is from a Mexican howitzer, and the iron ramrod of a Mexican escopeta, run through the heart of the stick, gives it the solidity of lignum vitæ. The ferrule which binds the ivory head of the cane is of California gold, and the Governor says he has no doubt that the ivory is from the tusk of "the elephant" which so many of the volunteers discovered in the deserts and *terres calientes* of Mexico.

Mineral Resources of Western Virginia.

The Kanawha Republican says that on the tops of the hills near the Falls of Kanawha, is a stratum of black flint rock which is found to be the very article with which to grind the Hydraulic Cement; beneath this is a stratum of Bituminous Coal, with which to burn the rock cement; and under this is a stratum of Cannel Coal, and again under this is the Hydraulic Cement rock in inexhaustible quantities, and of a quality equal to any in the world; and all this upon a stream that is generally navigable.

Ship Building in this City.

From the 1st of January to the present time there have been built and launched at New York twenty-eight vessels, whose aggregate tonnage is 20,251 tons; and there are now on the stocks twenty-two vessels whose tonnage amounts to 28,960 tons, making a total of fifty vessels and 49,211 tons. The value of the whole is not far from three millions three hundred thousand dollars.

Good Post-Office Regulation.

By a recent regulation of the British Post-Office Department, any letter having the writer's name and residence engraved on the seal, or writen on the outside, and not finding the party to whom the same is addresed, will be returned to the writer immediately through the Post Office, and not through the Dead Letter Office; by which regulation considerable anxiety and loss of time will be prevented.

Improvement of the Mississippi Rapids.

Some time ago a Convention of deligates representing towns, cities, and States interested in the improvement of the Rapids in the Mississippi, River, was called at Davenport, Iowa. The day fixed was the 4th of July, but owing to the prevalence of the Cholera, the time of meeting was postponed until the 10th of October next, at which it will be held.

A Fine Work.

A reduced copy of Huntingdons picture Mercy's Dream, by Mc. Mutric, for the Philadelphia Art Union, is in the possession of Mr. Ritchie the eminent engraver in chamber St. this city, who is engraving the *Distribution Plate*. The work will be executed with skill as the engraver knows well, how to preserve the life and spirit of his copies.

A Fossil Ape is said to have been found lately in the upper tertiary stratum at Montpelier, Vt. This is an interesting fact, taken in connection with the fossil elephant discovered by Professor Agassiz in New England.

The Quakers and Secret Societies.

At the late session of the New York and Pennsylvania Yearly Meeting of the Free Will Baptists, a set of resolutions against all secret orders was passed, which are quite stringent in their character. They declare that the tendency of such orders "is to destroy the peace of Zion;" forbid the licensing of any minister who is known to be a member of any of them; recommended the churches under their authority to expel members who adhere to secret orders, and interdict fellowship with any church, quarterly or yealry meeting which refuses to comply with the resolutions.

Rattle Snake Hunter.

Among the wilds of Lake George, in the northern parts of this State, there is an old man who makes his living by catching rattlesnakes, pulling the teeth of those he wants to sell to showmen, and making oil out of others—an oil which ignorant people have been quackized to believe in its superior virtues for rheumatisms and sprains. To catch them he employs a strong leather loop or noose attached to the end of a pole eight or ten feet in length. With this p le he cautiously approaches the den, in front of which the snakes bask in the sun, placing the noose over the head and neck—the noose being so constructed that when the snake struggles, the tighter he is held, rendering escape impossible. When the old fellow wishes to tame them and render them harmless he extracts their frangs in the following manner: He lays the head across a log of wood, then places his foot on the neck, pressing it until his snakeship trows back his upper jaw—the mode in which they bite; he then applies a pair of pincers, and with the coolness of an experienced dentist pulls out the frange one by one!

The Fair of the American Institute.

This Fair, the 22nd of the Institute, opens on next Tuesday at Castle Garden. The anniversary address will be delivered on the 11th by the Hon. Levi Woodbury. It will no doubt be an able one.

A Present of Mexican Armor.

Mr. Buchanan has presented to the National Institute at Washington, a coat of mail, consisting of breast, back and helmet. They were captured in one of the battles of the Mexican war. The helmet bears evidence of several severe sabre cuts, and a blow as from a musket. The weight of the three articles is 26 pounds; also, the coat of a Mexican lancer taken at the storming of Monterey.

Soap Stone Quarry.

The Manchester Democrat says the best soap stone quarry in New England is that at Francistown, N. H., discovered in 1794, but not much worked till eight years later. It has since yielded to its owner, Mr. Fuller, $2,500 per annum.

A Dog Disgusted.

Sir Walter Scott being asked to sit for his portrait for Terry the actor, said that both he and his dog Maida were tired of that sort of thing—Maida particularly; where she had been so often sketched that, whenever she saw an artist unfold his paper and arranged his brushes, she got up and walked off, with a dignity and expression of loathing almost human.

Heavy Verdict.

At Berkshire, Mass., last week, a verdict of $7,000 was rendered against the Berkshire Railroad Company, and in favor of D. B. Campbell and wife, for injuries sustained by them while crossing the railroad track.

Counterfeit $5 on the City Bank; Providence, R. I., have just made their appearance in Boston. Vignette, a female and eagle; female on each end; unlike the genuine, yet executed s as to be likely to deceive.

The consumption in Ireland, last year, of wine, was 549,755 gallons; of brandy, 259,655 do.; whiskey, 7,072,993 do.; tobacco, 5,138,314lbs; tea, 6,713,272 do.; coffee, 1,313,971 do; sugar, 510,867 do. What has temperance done for Ireland?

A great riot has taken place in Arkansas, in which eight persons have been killed.

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For the Scientific American.

Theories of Electricity.

Many theories have been, in the course of time, proposed to explain the ordinary phenomena of electricity.

1. A. C. 600. THALES of Miletus, perceiving the attractive power exhibited by amber, ascribed to it the functions of an animated being. Apulius affirms that, he discovered the "wonderful cause of thunder."

2. A. D. 1599. WILLIAM GILBERT of Colchester, Eng., physician to James I., has been styled the father of modern electricity. In his time, the phenomena of magnetism were accounted for by means of emanating effluvia, and he applied the same theory to the explanation of electrical attraction, which he considers similar to the attraction of cohesion.

3. A. D. 1605. the Jesuit CABEUS supposed that the steams which issue from amber, when heated by friction, "discuss and expel the neighboring air; which, after it has been driven off a little way, makes, as it were, a small whirlwind, because of the resistance it finds from the remoter air, which has not been wrought on by the electric steams, and that these shrinking back swiftly enough to the amber, do, in their returns, bring along with them such light bodies as they meet with in the way."

4. A. D. 1629. According to the hypothesis of Sir KENELM DIGBY, "electrical attraction is made by tenuous emanation or continued effluvium, which after some distance extracteth into itself, as is observable in drops of syrups, oil and seminal viscosities, which spurn at length, retire to their dimensions. Now these effluviums advancing from the body of an electric, in their sphere or circle of their continuities; and these they do not only attract, but with their viscous arms, hold fast a good while after. The amber is made to emit these effluviums or files of unctuous steams by being chafed or heated. The reason they do not impel and protrude straw before they can bring it back, is that the effluvium, passing out in a smaller thread, and more enlengthened filament, stirreth not the bodies interposed; but returning into its original, falls into a closer substance and carrieth them back into itself. "This theory was embraced by Dr. Thomas Browne, who says, "flame is not attracted, for fire consumes the effluxions." "The motion of the attracted particles is performed by the breath of the effluvium issuing with agility; for as the electric cooleth, the projection of the atoms ceaseth.

5. A. D. 1630. PETER GASSENDI, the French philosopher adopted the same crude hypothesis, and supposed that "these electrical rays being emitted several ways, and consequently crossing each other, get into the pores of straw, and by means of their decussation, takes the faster hold of it, and have the greater force to carry it along with them, when they shrink back to the amber whence they are emitted.

6. A. D. 1645. As the preceding theories are unapplicable to glass, the great RENEDES CARTES attempted to account for electrical attractions, by supposing certain particles, shaped like small pieces of ribbon, to be harbored in the pores or crevices of glass, and to be emitted by friction, like the effluvia of amber.

7. A. D. 1680. The ingenious ROBERT BOYLE supported the hypothesis of emitted and extracted effluvia, and replied to the objection of Cartes, by remarking that "a stinking odor" is actually emitted by glass, when two pieces of it are dexterously rubbed together.

The effluvial theory ended with the seventeenth century. "Let him also tell me," says Newton in his 27th query, "how an electric body can by friction emit an exhalation so rare and subtle, and yet so potent, as by its emission to cause no sensible diminution of the weight of the electric body, and to be expanded through a sphere whose diameter is above two feet, and yet to be able to agitate and carry up leaf copper or leaf gold, at the distance of above a foot from the electric body?" Previous to 1700, all effluvia were supposed to return to the bodies whence they had been emitted; because they could not otherwise account for the fact, that such substance were not sensibly wasted by emitting effluvia. But when the subtility of light was demonstrated, and that of the effluvia of many bodies was better understood, philosophers gave up the docrine of the return of effluvia, both with regard to electricity and other subjects.

J. W. O.

An American Prime Meridian.

Mr. G. W. Blunt, has in the Journal of Commerce taken sides against the proposed change of the Prime Meridian—reckoning from Greenwich London—suggested by Lieut. Davis, as noticed by us before, at the late convention of the American Scientific Association. The merchants and shipmasters of Boston have also come out against the proposed change. The arguments of Mr. Blunt are unanswerable. He says "if the change is adopted all communications between English and American vessels, and for a long time between American vessels with each other—as the common practice now is for navigators at sea to communicate to each other their longitude, an exceedingly useful practice, often leading to the correction of otherwise fatal errors, under the new order of things, "the failure to give the reckoning as from Greenwich or New Orleans, or to hear or understand it rightly when given, may involve ship, cargo and navigators in one common ruin." A portion of the charts used by U. S. navigaters are and must continue to be of English construction, and consequently marked with the longitude of Greenwith. To reduce this to an American standard, upon a sudden emergency, is here held to be pregnant with present evils, if not absolute danger.

Against all this perplexity and mischief there is not a single countervailing advantage, but the proposed change "is suffered to rest upon a supposed scientific necessity and upon considerations in some way connected with our national honor, the change would be only nominal; that there is no good reason for abandoning the Greenwich meridian, or any other of the common property of civilization—and, in a word, goes dead against the whole project.

American Tea.

Mr. Smith, whose operations with the tea plant, we have noticed before in the Sci. Am., and who has planted his sprouts in S. Carolina, expects to raise good tea in this country. He estimates the annual consumption of tea in the United States to be eleven millions of pounds, in Europe, fifty; total sixty-one millions. China produces over nine hundred millions of pounds, of which the Chinese export only about seventy millions. An acre of land will produce 547 pounds; consequently the cultivation of 20,109 acres of land in the fourteen tea-growing States will supply the consumption of the United States. To supply Europe would require 91,411 acres of land. He supposes that there are fourteen of our States that would grow tea, and that 111,520 acres of land, cultivated as tea plantations, averaging 7,965 for each of the fourteen States, will supply the consumption of the article both for Europe and the United States. The experiment Mr. Smith is engaged in is a highly interesting one, and will be attended with vast benefits to the country if completely successful.

A few years ago, there was no tea grown but in China, and indeed this is the principal country where it is grown yet, and where we get all our supply; but there is no good reason to suppose that tea equally as good as the Chinese, may not be grown in many other countries, and pursuing this idea, some English capitalists, have established tea plantations in the East Indies, which are in successful operation, and are now supplying Thibet, and will soon supply Chinese Tartary herself with tea. The United States can supply herself with tea of home growth, at a much cheaper rate than to bring it from Canton.

Charleston Artesian Well.

The Artesian Well at Charleston is still pursued, notwithstanding the discouraging facts which were recently published. It is now 905 feet deep. The scientific men state some facts in the Charleston paper, which have revived their confidence in its eventual success.

To Separate Nickel and Cobalt from their Oxides.

The mixture of the oxides is submitted to the action of a solution of cyanide of potassium with the application of heat, taking care that the cyanide is free from cyanate. The solution is boiled to drive off the excess of acid; at the same time the cobalt-cyanide of potassium is changed into cobalted-cyanide with disengagement of hydrogen. If there be then added to the hot solution oxide of mercury in fine powder, the nickel will be promptly precipitated one part of it in the state of oxide, and the other part in the state of the nickel in the solution. This precipitate washed and calcined, leaves oxide of nickle perfectly free from cobalt. The cobalt remains in solution is then supersaturated by acetic acid, and the cobalt precipitated by the adition of sulphate of copper.—This precipitate is a cobalted-cyanide of copper, containing for three eqivalents of copper ten equivalents of cobalt; on treating it by potash, the cobalt is re-dissolved, and becomes a cobalted-cyanide of potassium, and there rests only the oxide of copper, the quantity of which enables us to calculate the proportion of cobalt. The quantity of cobalt may also be ascertained by taking the precipitate, re-dissolved in hydrochloric acid, with the adition of a few drops of nitric acid, and then precipitating the copper by sulphuretted hydrogen, and the cobalt by caustic potash. This method is much more simple, when the total weight of the two metals or the two oxides are known, and when we are satisfied to determine the exact quantity of nickel, and calculate the cobalt by the difference.

[The above is valuable to minerologist,

The Solubility of the Oxides of Iron, Copper and Cobalt by Caustic Potash.

The oxides of copper and of cobalt dissolve in large quantities in caustic potash, so much so that we can even employ the solution of this first-named oxide to determine small quantities of grape sugar mixed with cane sugar, which reduces the deutoxide of copper to the state of protoxide.

The solution of the oxide of copper in caustic potash may be diluted with water, without a separation of the oxide of copper. When it is evaporated to dryness, a deep blue mass is attained, which dissolves in water, communicating to the liquid a beautiful green color. When a current of chlorine is passed through a solution of oxide of copper, in caustic potash, the liquid assumes a deep green, but the moment that the alkali is completely saturated with chlorine, the combination which was formed is decomposed, the oxide of copper is precipitated, and chlorine disengaged. In making use of the apparatus invented by M. Liebig, for the determination of carbonic acid, M. Volker of Berlin found that the solution of caustic potash employed, which at first was quite clear, contained after the passage through it of carbonic acid, a brown floculent precipitate of oxide of iron. Some direct experiments made with a concentrated solution of caustic potash and oxide of iron, recently precipitated, confirmed the nature of this substance; consequently, M. Volker recommends, for the separation of alumina and oxide of iron, a solution of caustic potash, and moderately concentrated (if the solution be too diluted, the alumina will be but partially dissolved.)

New Galvanic Battery.

Proff. Stohrer of Leipsic, makes a powerful and compact battery as follows. He employs zinc, and charcoal cylinders. The cylinders are composed of coal and coke in powder, well mixed together, to which is added a sufficient quantity of coal-tar, to render the mass of a consistence suitable to be moulded. When dry, the cylinders are placed in a muffle and submitted to a white heat, every variety of shape may thus be obtained, and this substance would appear especially of service for sharp or pointed surfaces, as well on account of its durability as for the perfect homogeneousness of its grain. The zinc element in M. Stohrer's battery is amalgamated to prevent the rapid consumption of metal, which would otherwise take place. With a battery of 2 3-4 inches in height, and cylinders of about 5 inches in diameter, an iron wire of the thickness of an ordinary sewing-needle may be melted, as also a watch-spring; it will communicate a magnetic power capable of sustaining 220 pounds. M. Stohrer makes use of electro-magnets thus formed, to form the steel magnets of the electro-magnetic machines of his construction.

Social Importance of the Working Classes.

The three elements of the resources of the great commonwealth are labor, intelligence, capital; the last is gathered and administered by the wealthy; the second is contributed by the gifted and studious; but the first great contribution of endless toil is supplied by the working classes. There are they in your fields and your mines, your factories and your ships, your warehouses and your workshops, giving an amount of manual and physical effort which no nature, no patience but that of men bred to labor, could sustain. Hardly less consumers than producers, they form that great elastic power in the community which endures privation and adjusts demand and supply. Amidst scarcity and high prices, their unavoidable privations diminish consumption; and amidst plenty and cheapness, their increased enjoyments restore the remuneration of capital and the profits of trade. In national policy their judgment, once enlightened, would have immense force and equal value—their voice raised in favor of religion, peace, rational liberty, and just government, irresistible.

Turkish Character.

It was said by Gibbon, most truly, that the Turks have, since the period of the Conquest, encamped, not settled in Europe. They amount to a fourth, or a third, at the utmost, of the population, of that part of the Sultan's dominions. They are scattered in very unequal proportions over its surface. In some parts they form a torably thick agricultural population. In others, as at Constantinople itself they are engaged in the trades and manufactures of a large city. But nowhere do they exercise those extended operations of skill and thought, which bring men together, cause them to rely on each other, give them the habit of combined peaceful action, and impart to them the intelligence and the energy on which alone a strong commonwealth is built up. The Armenians are their bakers; the Jews their dealers; the Greeks their merchants. The very organization of the people seems to have denied them those finer qualities, both metal and corporeal, which fit men for the superior branches of industry. A Turk's fingers, Dr. Walsh quaintly observes seems all to be thumbs; he has no manual deqterity for any delibate employment, and his mind is as unfit for subtile operations as his body. The Turks neither write nor print (with the exception of bombastic poetry, and more bombastic history.) They do not build, but destroy. They show no wish to adorn the soil which they inhabit, or to connect, in any way the existence of the present generations with posterity. Their object in this world seems to be mere animal existence, as completely as that of the beasts of the field. The religious sense is deep, enduring exalted, but it is a religion which deadens and stupifies intellectual facilities.

Botany of the Platte River.

Dr. Ormsby writing from the Platte River says "the whole valley of the Platte is rich in new and most interesting flowers. but very few of which had ever before been seen by the emigrants. Several species of the Cactus are found in great abundance. One in particular is truly beautiful, growing in the shape of a pear, surmounted with a beautiful large purple flower. The whole plain furnishes a most ample field for the speculations of the Botanist."

Ship Building in Newark, N. J.

The Oliver J. Haynes, a fine bark of 430 tons, built at C. C. Joralemon's shipyard at Belleville under the superintendence of Capt. Francis Scott, for the Buenos Ayres trade was launched at 10 o'clock Monday morning. She will be one of the finest vessels in the trade and is to be fitted up in a superior style for passengers. Her lenth is 120 feet; breadth of beam, 28 feet; depth of hold 14 feet and 9 inches.

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New Inventions.

Great Invention.--Improved Piano.

A. Mr. Alexander Bebain, of Paris, says the *Journal des Debats.* has recently made an improvement on the piano, which will create quite a revolution in the musical world. It attracted great attention at the recent Exhibition of Manufactures in Paris. It is a mechanical apparatus capable of being applied to all pianos, and by means of which every kind of piece can be executed. Quadrilles, polkas, waltzes, &c., spring as if by enchantment from this combination, under fingers the least practised, and the most unacquainted with the instrument. If one wishes to give a soiree or a country party, there is no need of looking about for performers; each member of the company can furnish his contingent of harmony, and pass in turn from dancing to music.

Gutta Percha Solutions.

Gutta Percha readily dissolves in a solution of chloroform without the aid of heat. The solution thus formed makes a capital varnish, for if it is brushed on any object, the chloroform evaporates with great rapidity and leaves a thin skin of the gutta percha, which thus acts as a preservative against the influence of water and air. It is therefore excellent as a plaster for cuts. This solution is excellent to preserve fruit in a collection of natural history. Heretofore wax has been used for this purpose, but it is not so good as this, for this solution prevents the fruit from drying. This solution is the best and most delicate varnish for paintings and drawings on paper.

The New Prussian Fire Arms.

We noticed some time since that a new breech loading musket had been invented in Prussia, and from the barrren description of it which had then been given, it appeared to be the same as the breech loading muskets—which are well known here. But the "fire iron," it seems of the German, is different from the Americans, as will be perceived by the readers, who are acquainted with these things.

"The musket has no lock and is loaded at the stock end of the barrel. The barrel is slightly rifled, but the grooves are perfectly straight, and not spiral, as in the American gun. The common charge is one-half of that used in the old percussion gun, and is said to carry the ball to its mark nine hundred yards. None of the powder is wasted, the fire being communicated *from the side of the barrel*, and not from the breech. This is effected by an ingenious contrivance. The part of the cartridge next the ball is filled with an explosive substance similar to that in a percussion cap. This is made to explode by the contact of a piece of steel about the length of an eight-penny nail, which passes from the outside of the barrel through the cartridge. The gun is called the "nail firer." It can be discharged by a common soldier eight times in a minute, and need not be taken from the shoulder to be reloaded.

New Printing Press.

The New York Sun says that they are about to be furnished by R. M. Hoe & Co., with new printing machinery, by which they will be able to throw off from 15,000 to 20,000 copies of the paper per hour. Such is the immense edition of the *Sun*, although two of Hoe's gigantic "lightning presses,,' are in constant operation to print it, their speed is not sufficient for the demand.

New Method of Navigating Shallow Rivers.

Mr. Bourne has invented a method of navigating the shallow rivers of India, towing by steam-tug light barges, drawing only 12 inches of water. The illustrated London News contains a description and engraving of the craft.

Georgia Mechanics' Convention.

The Journal and Messenger (Macon, Geo.,) calls the attention of the mechanics and artists of that State to the formation of a Mechanics' Institute, and to consult regarding the mechanics and artisans welfare.

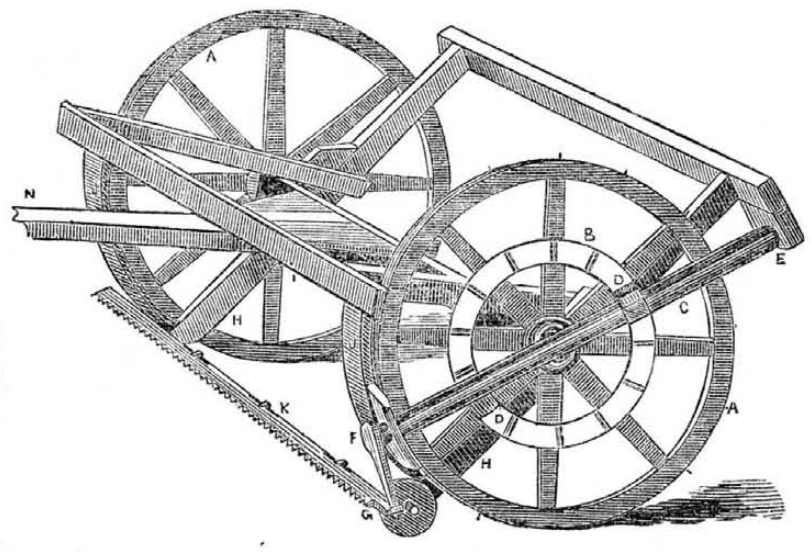
Steam Linen Loom.

A correspondent of the N. Y. Commercial Advertiser indulges in the following description of a Steam Power Loom which shows that he has never been in Belfast. "A valuable invention has been made in Belgium. It is distined to effect a great reform in the manufacture of linen clothes as the steam loom has made in that of woollens. It is nothing less than a steam loom for linen fabrics. All the ingenuity and perseverance of manufactures have been tested to invent a machine of this kind; but the fabrics have been uniformly so poor that the machines have been thrown away and manual labor again resorted to.—The difficulty has been removed by the scientific skill of a Belgian engineer. A model of his machine, with specimens of the fabrics, has been exposed at the fair at Ghent. The clothes are said to rival in firmness, fineness and smoothness the best of those made by hand."

Official Telegraph

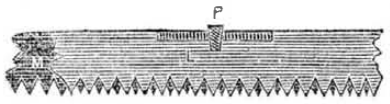
The first experiments with a newly-invented optical telegraph have been recently made at Berlin, Prussia. It is intended to be used in military operations, in time of war, and to communicate more rapidly, and farther information respecting the approach, numbers and distances of the enemy. It is capable of being transported, but cannot be used except in sunshine, as the communication of the news is made by the reflections of the sun's rays on a mirror. The experiments were witnessed by several officers of the Engineer corps, who were no doubt, perfectly astonished at the operations, something which we cannot be until we also have ocular demonstration of its power's.

ADKINS' GRASS CUTTING MACHINE.---Figure 1.



This machine is the invention of Mr. Homer Adkins, of Round Prairie, McDonough Co., Illinois, as noticed in our last number. It is made of two wheels, A A, like a cart, as shown in figure 1, which is a perspective view; and with reciprocating cutters, as shown in the section view, figure 2.

FIG. 2.



On one of the wheels of the wagon there is fixed a cog-wheel, B, and there are spurs on its periphery to make it *take hold* of the ground. There is a frame made of angular, longitudinal and cross bars, which is fixed around the axle, or rather the axle passes through, bearings in *it*, inside of the wheels, and by which its front end, with the cutters, can be lifted up with pressing down on the back part of the frame, at any moment. K, fig. 1, are the cutters; they are secured at the front of the frame spoken of, being placed low down on the longitudinal bars, H H, of the frame, in which there are bearings in them and also in the suspended curved bearings, J J, for a small roller, G, on each side, which support and roll under the cutters. The cutters are made of two blades, like long rip saws, the teeth of which may be angular or crescent formed edges, or the lower one may be of angular teeth, and the upper ones crescent shaped. The lower blade is stationary—fixed to the bars, H H, at the ends. M, fig. 2, is the fixed blade; L, the moveable blade or cutters, and P is a guide on the lowest blade, which comes over above the upper one. The upper one has a reciprocating motion from side to side. This is given to it by the cog-wheel, B, and a rocking shaft, C, which is fixed on bearings, E, on the frame. On the end of this shaft is an oscilating arm, F, which is secured to the one end of the active cutter blade, K, as seen in fig. 1. The rocking shaft gets its motion by having two cams, D D, on it—one at each side, the one above and the other below. When the wheel, B, revolves, one cog acts upon the cam, D, at one side, driving it outwards, and the shaft in one direction, and then when that cog ceases to act upon the cam, the other cog on the other side acts upon the other cam, D, in a different direction, and thus continually the arm, F, gives the active cutters, when the wagon is drawn forward, a reciprocating motion. The lower cutters being stationary, they grasp and hold the grass to the action of the active cutters. N is the pole of the wagon, and I an angular front beam of the frame. We mentioned last week that measures had been taken to secure a patent, and that it had been tried on a large machine, which the inventor states "worked well." The grass, as will be perceived, falls behind the cutters, and it is as applicable to cut grain as grass.

Science Turned Criminal.

Perhaps one of the most orlginal and marked signs of the times, says the London Patent Journal, is an application of science to crime—whether it be for the commission or the detection of it. The anæthetic properties of chloroform have been already adapted to the art of burglary—some housebreakers having recently availed themselves of it as a means of stupifying an old lady into whose house they had entered. The precipitation of metals by the electrotype has been used to coat leaden casts of pennies with a pellicle of copper, while the ingenious process of anastatic printing, or of producing one engraved impression form another, has, within the last month, been applied to the indefinite multiplication of bank notes—and that with such consummate success, it is said that the ink of the signature alone enables the bank authorities themselves to distinguish the forgery from the orignal.

Machine for Opening Oysters.

The Editor of the *Evening Post*, now travelling in Europe says that the old-fashioned way of rapping the shell of an oyster, forcing a knife into the body of the unfortunate animal, and fetching him to light with a "How many sir?" has been superseded in Paris by a machine.—"Mr. Baudon, with his *ecailleres*, reforms the barbarities altogether. The oyster is laid over so gently in a groove—the screw is turned once, twice—*le voila*—the unconscious oyster is before you blinded by the light, without a gaping wound. There is no series of raps to warn the oyster of his doom—no portion of his castle is breached; but the vice is turned, the valves fly apart, and, blinded and bewildered, the live oyster is consigned to tickle your palate with his dying agonies."

Useful Receipts.

Carmine.

Boil 1lb. 4 oz. of ground cochineal and a very little of the carbonate of soda, in four gallons of soft water for 20 minutes; then take it from the fire and add 6 drams of alum, and stir the mixture for a few minutes, and let it stand for a quarter of an hour for the dregs to subside, then run off the clear liquor strain the sediment through a fine seive or cloth, and then when cold add the white of two eggs with the sediment, fish glue or isinglass will answer as well as the eggs. The muriate of tin may be used instead of alum. The weight of the cochineal, may be reduced to any amount, to make a small quantity, if the proportions are preserved.

This is the most beautiful pigment used for fine painting—it can also make beautlful red ink and in fact, may be termed red ink powder. It is also the most beautiful pigment for heightening the blush on the cheek of the vain, the proud, the gay.

Method of Preventing the Fracture in Glass Ch mneys.

The glass chimneys which are now in such extensive use, not only for oil lamps, but also for the burners of oil and coal gas, very frequently break, and not only expose to danger those who are near them, but occasion very great expense and inconvenience, particularly to those who are resident in the country. The bursting of these glasses very often arises from knots in the glass where it is less perfectly annealed, and also from an inequality of thickness at their lower end, which prevents them from expanding uniformly by heat. The evil arising from inequality of thickness may be cured by making a cut with a diamond in the bottom of the tube.

To Treat Cases of Drowning, &c.

Strip off the wet clothes, cover the body with other clothes, to matntain the heat, then wrap up in blankets and give warmth by bottles filled with hot water, placed in contact with all parts of the body; let several assistants rub the body with their hands; clear mucus from the mouth, hold the nose, and then suck out foul air with a tube, and blow in fresh air in the same manner. Foreign bodies are apt to stick in the throat, and cause choking. Pass your finger immediately down the throat as far possible, and you may often remove them. When a fish bone has struck in your throat, chew rapidly some bread into a mass, and and swallow it quickly, and it will often relieve the throat. The pulse may be best felt an inch above the root of the thumb, and about half an inch from the outer side of the arm. Where there is any doubt, apply your ear over the left side of the chest, as the action of the heart may sometimes be heard, even when the pulse can be scarcely felt. In the event of the clothes catching fire, roll the person in a carpet or hearth rug as quickly as possible, to stifle the flames, leaving only the head out for breathing.

Preparation of the Oxide of Antimony.

Mix in an iron vessel 15 parts of sulphuret of antimony in fine powder, with 36 parts of sulphuric acid, and let the mixture stand for about 30 hours, taking care to stir the mixture often, and apply a gentle heat. Sulphurous acid gas is then given off in vapor, which, when it has ceased, water is added, and also the carbonate of soda, which decomposes the sub-sulphate of antimony, and the oxide is obtained, which, when dry, is of a fine greenish color.

Sweet Flag Syrup.

After peeling, slice the roots, put them into cold water, and boil until the strength is reduced to the degree that is desired; then make a thick syrup of sugar and water, in which boil the flag, stirring constantly, until the sirup becomes candied and dry, the flag being completely coated and saturated with it.

Silk articles of dress should always be neatly folded before they are laid aside. When silk is creased it is not possible to restore it entirely.

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Simplicity of Discovery.

From the complex, yet simple and wonderful nature of the human mind, man is fond of the mysterious, the complicated, and wonderful; and he is more ready to pursue new projects through mazy labyrinths of study, than along the straight road of simplicity. The famous Philistine general who came down to the Hebrew prophet to be cured of a fatal disease, treated, at first, with contempt the simple command of the prophet, "go wash in the Jordan and thou shalt be healed." He thought that some grand ceremony, or some wild incantation, would have to be performed to remove far from him his life-eating malady. How complex are false theories in comparison with the true. How complicated were the theories of Plato, in comparison with those of Newton; and who would have thought, that from the falling of an apple, the great philosopher would have made his *greatest* discovery. By simply condensing the steam in a separate chamber from the cylinder, and admitting it to the piston at both ends of the cylinder, the immortal Watt changed the whole nature of the steam engine and gave it new powers.

We may well admire the powers of that machine which can propel the gigantic steamboat over the stormy ocean, or whirl the thundering train of cars along their iron ribbed footway, surpassing the flight of the eagle in swiftness; but seldom, very seldom, do we find one, who, in beholding such wonders, is fully impressed with that divine truth, "God hath chosen the weak things of this world to confound the mighty." What are the elements that propel the steamboat or the iron car, and how many? Only two—fuel and water. The engine, the most complex part of the whole, is but the means to convey and apply the power. With the tree from the forest, or coal from the mine, and his boiler of water from a neighboring fountain, the engineer mounts his iron steed, and when all is ready, he touches his valve rod, his iron steed feels the *breath of his life*, and well may we apply the words of Scott,

"He is off, he is off, o'er bush, brake and scaur,
They'll have fleet steeds that follow, quoth young
Lord Lochinvar."

How complex was the electric telegraph of Soemering, with his thirty-five golden points, in comparison with the effectual and simple Electro-Magnetic Telegraph of Morse, who, with a single wire, sends the whispers of affection from lake to sea, on swifter wings than those of "*Love*."

All the great discoveries that have been made, are remarkable for their simplicity, because they are based upon the truths of science, and this implies that many errors may yet be found in its woof and warp.

In saying this much upon the simplicity of discovery—a theme upon which we might easily dwell, to fill up column after column—we would exhort all those who have a taste for the pursuits of science, or the advancement of the arts—agricultural or mechanical—to remember that simplicity should be their first, second and last considerations, to success.

Opium.

This drug is the juice which exodes from incisions made in the heads of ripe poppies, and rendered concrete by exposure to the sun. The best opium comes from Turkey, the East India kind is not so good. Opium occurs in brown lumps, not very large. Good opium is hard when cold, but becomes soft when worked in the hands. It has a strong offensive smell, and is very bitter to the taste. Proof spirit digested upon opium, forms *laudanum*. Opium has been long known as a deadly and dangerous narcotic; it has been supposed that the soporific effects of opium depended on morphia, but in 100 parts of the best Turkish opium only seven per cent. of morphia can be extracted; but morphia is not more poisonous than opium. Ure believes that the deleterious activity of opium is due to its union of an oleate or margarate of narcotine with morphia

Opium is a slow and a rapid poison. People can accustom themselves to it, and be able to eat as much as might destroy the lives of three or four at one dose, who were unaccustomed to it. Opium drunkenness is a horrible vice of the Turks and Chinese. Its drunken dreams are pleasing, but they reveal terrible results. The habit of opium eating is perhaps the most dangerous of all others—the most alluring—the most difficult to break up.

It is said that a great increase in the consumption of opium has taken place in America, especially in the Eastern States, within the past seven years, and its votaries are found principally among our women. It is a vice which should be frowned down by every person,—it is a drunkenness more deadly and vicious than that of spirits in any shape.

Rules and Regulations for Steamboats.

Our steamboats should be compelled to use gangway roads with railed sides. Many accidents have occurred by passengers being jostled and falling over the side into the water; and not a few deaths have resulted in such cases. Last week an old man, his daughter and child fell off the gang plank, at Albany, while going on board the Isaac Newton. Only for the prompt action of some of the passengers, they would have been drowned, for the officials on board, were either too careless or lazy to use active measures in rescuing the unfortunate individuals who, from the awry manner in which the plank was placed, were precipitated into the river. At every steamboat pier there should be one or more stout-built gangplanks, with a railing on each side, and fitted on wheels. This would form a safe bridge between the boat and the dock. Another useful regulation would be to have dock officers who would look after these things, and whose duty should be prescribed by city law, to order the boats to depart at their regular hours, as advertized. It is no uncommon thing, now, for some of our steamboats—those on the North River especially—to advertize their sailing hour at 6 P. M., and then wait until 9 before they start. There should be some way of preventing such evils—for great evils they undoubtedly are, and we know of no better plan than the one we have recommended.

New York Gas.

Mr. G. M. Kentish, in a communication to the *Tribune*, is out against the New York Gas Company charging fifty cents for 100 cubic feet of coal gas, as a reduction from seventy cents, the price of the old resin gas. Mr. Kentish exposes this fraud of change in price, by saying that coal gas is only one half as dense as resin gas, and the price for the coal gas should be reduced to 35 cents instead of 50. The old price, he says, was exhorbitant, but this makes it 43 per cent. more. Mr. Kentish is right; Parnel says that two cubic feet of resin gas, is equal in illuminating power to five cubic feet of coal gas. Coal gas can be made nearly as cheap in this city, if the business was well managed as in some cities in Europe, where the poorest families—as in Glasgow—burn it, at five times less expense than oil or candles, which are about the same price as with us. It is time that our people were awakening to a scientific knowledge of these things, which embrace the nature, manufacture and the economy of gas illumination. We are in favor of gas illumination because it is the most beautiful, convenient and economical—that is where monopolies do not love too high prices. We have plenty of coal beyond the Alleghanies, for the purpose, and the Blossburg coal, Pa., makes good gas,—this we know, for we have made it.

Navigating the Air.

Mr. Penington, the original projector of a flying machine to navigate the air, which has been noticed by us before, has returned from the far west, where he has been making some experiments on the great prairies. The Baltimore *Sun* regrets to say that he has not been sufficiently successful to enable him to come back in his own carriage. He is, however, sanguine of fully succeeding eventually in making a voyage to California, or even to Europe, in his car, through the air.

A large machine of this kind is now building near this city, by Mr. Robjohn. The canvass is all ready, and is about 80 yards in length and 50 in diameter. It is to be propelled by two oscilating five horse power engines, which are already provided and secured in the car. They occupy a very small space and are well made. They are to propel the huge gaseous monster by fan wheels, we believe. We await in calm contemplation the mighty results of this enterprise. We can say this much about it, that the workmanship will be well executed. The projector has at least great courage and deserves success—in any other department, he would attain it.

Lake Superior Copper.

The copper mines of Lake Superior are the richese in pure copper of any others in the whole world. Some masses of pure ore are discovered which weigh 60 and 80 tons. These are reduced to pieces, in the mine, of about seven tons, and then are hoisted to the top of the mine, where they are reduced to pieces of smaller size for shipping. Mr. J. S. Hodge, an eminent minerologist, in some remarks made before the Scientific Association at Cambridge, said that at the Minesota mine, near the Ontonagon River, he had an opportunity of witnessing, in June last, the most extraordinary mass that has yet been met with. Two shafts had been sunk on the line of the vein 150 feet apart. At the depth of about 30 feet they struck massive copper, which lay in a huge sheet with the same underlay as that of the vein—about 55 deg. towards the North. Leaving this sheet as a hanging wall, a level was run under it connecting the two shafts. For this whole distance of 150 feet the mass appears to be continuous, and how much further it goes on the line of the vein either ways there is no evidence, nor besides what depth it penetrates in the solid vein. It had been cut through in only one place, where a partial thread afforded a convenient opportunity. Measuring the thickness here as well as the irregular shape of the gap admitted, it was found somewhere to exceed five feet. Allowing the thickness to average only 1 foot, there would be in this mass 1200 cubic feet, or about 250 tons.

The mode adopted to remove the masses is to cut chanels through them with cold chisels, after they are shattered by large sand blasts put in behind them. Grooves are cut with the chisels across their smallest places, one man holding, and another striking, as in driling. A chip of copper three quarters of an inch wide, and up to six inches in length, is taken out, and the process is repeated until the groove passes through the mass. The expense of this work is from $9 to $12 per superficial foot of the face exposed. Fragments of veinstone enclosed in the copper, prevent the use of saws. A powerful machine, occupying little room, is much needed which would perform more economically this work.

Dr. Jackson stated that many of the mines of copper on the shore of Lake Superior would be entirely worthless to the companies owning them, and that the most profitable mine could never pay a dividend of more than five per cent. This fact is not owing to any deficiency in the amount of the article, but to the extreme difficulty of mining it.

In our opinion the hand drill described and illustrated on page 348, Vol. 4, Sci. Am., would be a most valuable tool to the miners of Lake Superior. By the drawing, any blacksmith or machinist might make a drill for five dollars that would do more work in one day with one man than four men with hammer and jumper. It is surely a most surprising thing, in this day, that pure copper is not worth the digging, because it is found in too large masses, and has to be cut or blasted—and the miners are not able to drill fast enough, because they use only the old jumper, or chisel. If the mining companies of Lake Superior want a machine powerful and compact to drill their copper, why don't they offer a premium for one of such and such dimensions, to accomplish so much work in a certain time. If they are liberal, and not mean about the matter, we warrant them that there will be found more than one man in the country, who would construct a machine to accomplish all that the most enthusiastic might hope for.

Great Chemical Discovery.

A Mr. Tighlman, an ingenious American gentleman, some time ago, discovered the great virtue of water, at high temperatures, to decompose certain substances, which before that period were, by the most eminent chemical authorities, supposed to be insoluble in water. He visited England and found that his discovery was not only new there, but was no sooner announced than men of wealth and scientific ability were found ready to engage in it. By water at a high temperature, Mr. Tighlman is able to take felspar and decompose it into alumina and potash, and to make from that common and heretofore useless material such salts of potash as the sulphate, chloride and chromate. Through the same discovery, Mr. Tiglman has made great improvements in the manufacture of certain acids, alkalis and alkaline salts, and they are destined to have great influence on the general welfare.

The Journal of Pharmacy states that Mr. Tighlman's discovery will be a saving of nearly one half the expense in the manufacture of soda, and we know that there is no better evidence of its value than to state that Mr. Tennant, of Glasgow, the greatest manufacturer of soda ash and potash in the world, has made an expenditure of between twenty and thirty thousand dollars in fitting up apparatus according to the plans of Mr. Tighlman. Notwithstanding the immense machinery already at work in Mr. Tennant's establishment, Tighlman's was so far superior that the privilege of using it was at once purchased by Mr. Tennant.

The above Journal also says, that it is established that there are seventy thousand tons of soda ash made in Great Britain annually, valued at forty-five dollars per ton, and equal to three million one hundred and fifty thousand dollars. The twin alkali, potash, is extensively used. Russia, Canada and New York alone export potash estimated at two and a half millions of dollars, and when it is considered that Mr. Tighlman is able to manufacture not only these, but sulphuric acid and many other highly useful articles, from common rocks extensively spread over Europe.

This discovery is one of vast importance to the whole world.

In 1838, sulphuric acid, valued at five millions of dollars, was manufactured in Great Britain, and Mr. Tiglman can obtain it from the same kinds of sources he gets his material for making soda and potash.

A Word to some Friends.

During a recent visit to Boston on business, we had the pleasure of making the acquaintance with several Editors, all of whom we found emphatically good fellows. We are especially grateful to Mr. Norris of the *Yankee Blade*, for his kind assistance in facilitating our business. Speaking of the *Yankee Blade*, it is one of the most sterling papers in this big country, and if any of our readers want a journal sparkling with bright scintillations of wit together with profitable reading, we would advise them to send $2 to Messrs. Matthews, Stevens and Norris, Boston. Mr. Simonds, the gentlemanly publisher of the *Saturday Rambler*, and *Pictorial National Library*, (a valuable monthly) stands ready to furnish the public with a journal excelled by none and equalled by few, save it may be the *Olive Branch*, published by T. F. Norris, which is too well known to require a puff from us.

Both of the above journals are prominent for their literary and moral excellenee. Mr. Kelly, the enterprizing and brilliant Editor of the *Aurora Borealis*, illuminates a large circle of subscribers by the weekly visits of his great northern light, not only that he is a tolerably good looking fellow but has a tongue of junior lightning. Last but not least among the many excellent Boston literaries, comes the *Boston Muscum*, edited by Mr. Putnam, a very talented writer; in point of mechanical execution this journal stands at the head, and its weekly visits to our *sanctum* are always acceptable.

It would be difficult to find, in this country, five newspapers of more substantial merit than the *Yankee Blade*, *Saturday Rambler*, *Olive Branch*, *Aurora Borealis*, and *Boston Museum*." We wish them every success.

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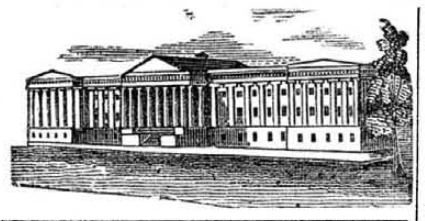

LIST OF PATENTS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending September 18, 1849.

To Franklin Jenney, of New Bedford for improvement in machinery for Dressing Shingles. Patented September 18, 1849.

To James Thomas, of West Chester, Pa., for improved machine for making Brooms. Patented September 18, 1849.

To Henry Bleecker, of Albany, N. Y., for improvement in Flues for Cooking Stoves. Patented September, 18, 1849.

To Wm. Wheeler, of Troy, N. Y., for improvement in Cooking Stoves. Patented September 18, 1849.

To Wm. Sours, of Mount Jackson, Va., for improvement in Cooking Stoves. Patented September 18, 1849.

To Elias Kaign, of Camden, N. J., for improvement in Cooking Stoves. Patented September 18, 1849.

To J. H. Doughty, of New York, N. Y., for Signal for Privies. Patented September 18, 1849.

To George Leonard, Jr,, of Shrewsbury, Mass., for improved Fire Arm, with several stationary barrels and a revolving hammer. Patented September 18,1849.

To Abraham Christ, of Unity, Ohio, for improvement in the Landside of Plows. Patented September 18, 1849.

To Enock R. Morrison, of Angelica, N. Y., for improvement in machinery for Riving and Dressing Shingles. Patented September 18, 1849.

To Lewis W. Colver, of St. Louis, Mo., for improvement in Rotary Churn Dashers. Patented September 18, 1849.

To D. N. Egbert, of Hudson, Ohio, for improvement in Rotary Churn Dashers. Patented September 18, 1849.

To Joseph D. Alvord, of Springfield, Mass., for improvements in Couplings for Cars. Patented September 18, 1849.

To Albert Woodhull & Charles Minturn, of New York, N. Y., (Assignees of John Watson & Edward Cart, of Hull, Eng.) for improvement in Gas Generators. Patented September 18, 1849.

To H. L. B. Lewis, of New York, N. Y., for improvements in Coupling for Cars. Patented September 18, 1849.

For the Scientific American.

For the Crank.

MESSRS. EDITORS—In the last number of the Scientific American, a correspondent, under the signature of "Pulley," boldly throws down the gauntlet against all those engineers, and others, who have not seen enough, to perceive that the crank is an "*inefficient, bungling and wasteful* contrivance." He says, that "arguments, tables and drawings have been adduced to prove that the *whole power* of the steam, as applied to the piston, is faithfully transmitted (by the crank) to produce a rotary motion of the shaft, "and that ridicule has been heaped upon those who dared to question its soundness." Mr. Pulley is certainly mistaken on this point. No tables, nor arguments have ever been adduced to prove that the *whole power, exactly*, of the steam is communicated from the piston to a shaft by the connecting rod and crank. The ground assumed by the friends of the crank, is this, that it is the most economical mechanical contrivance that has yet been discovered to convert the reciprocating motion of the piston rod into a rotary motion, to drive a revolving shaft. The only ridicule that has been heaped upon those who dared question thistruth, was of their own production—the numerous *bungling* contrivances which they have brought forward as substitutes for the crank,—they alone have sat, and do sit, in the chair of the *scorner*. He says, "of the arguments adduced, they appear to me but *reasoning in a circle*, and the tables and drawings but the *modus operandi* of the crank engine." Pulley is correct on this point; the friends of the crank have too much good sense to get out of a circle to reason—they leave that kind of metaphysics to their opponents, and if *they* are content to revolve on their toes, whirling round on the outside of the circle, or fly off at tangents, good and well. The *modus operandi* reasoners of the crank are too well versed in the subject not to know that both staics and *dynamics* are embraced in the working of the steam engine. There has been so much said by eminent men for and against the crank, that it would now be a jangling of words, to enter into a controversy on the subject. The debate with Mr. Stevenson and Mr. Onion, on this point, at a meeting of the Association of British Practical Engineers, last year, might satisfy any man upon the subject. The great difference between the *modus operandi* friends of the crank and their opponents, lies in this—the crankites can whirl round in their *circle* and cleverly whisk over the dead *power points*, whereas the anti-crankites, by traversing outside of the circle, either go down head foremost at the lower point, or get transfixed at the upper one—like the western horse that was found sticking to a rock of loadstone. As we are only on the defensive, we complain of a want of candor and generosity on the part of the opponents of the crank, to blame us for our ingenuity in getting over obstacles, which to them are insuperable.

The great object of all debate should be the advancement of truth—to elicit something new. The best argument which can be based in defence of the crank, is its universal use—its victory over every opponent that has contended for the mastery, as its substitute. Mr. Pulley has advanced no new idea that can lead the benighted advocate of the *crank* into a better system of mechanical contrivances and combinations. He has only found fault, and I wait to be made wiser by some remedy suggested by him, to banish what he calls *the bungling crank*, from every engine. And let me tell him that he must speak in deeds, and not stigmatize the advocates of the crank, for using it, because there is no better. If he cannot produce a better, he should not speak out on the subject. Many of *us*, advocates of the *crank*, were once reasoners outside of the circle, and to our cost, and we don't want to be told that it is a *bungling contrivance*, we want to see a better substitute, and Mr. Pulley may rest assured that, whenever he produces a better (the whole economical results alone can tell) there are men ready to pay well for the use of the discovery.

As it regards the leverage of the crank, it would be more than weakness to answer him, —there can be no *two* opinions among enlightened engineers on the subject and to do justice to the friends of the crank on this point, it would require a diagram for explanation.

PINION.

Allaire Works.

Wagons and Carts.

A farmer in England, named Edward B. Liddington, has produced a prize essay on the comparative merits of wagons and carts, which should arrest the attention of our farmers, for if he is right our farmers, in general, are wrong. After five years' experience with wagons, and nearly the same with one horse carts, on a farm of one hundred and seventy acres of arable and eighty acres of pasture, he came to the conclusion that the carts were of the greatest advantage. As our farmers all use wagons, let them pay some attention to his statement. He says :—I have no light plowing land, nor have I more than twenty or thirty acres of very heavy land. I will, therefore, relate my actual experience. In the employment of wagons and the old broad-wheeled dung-carts, I required one wagon, one cart, and three horses to every fifty acres of arable land. I also kept a light cart for general purposes. Now that I am empolying carts, I find that I get through my work much more easily with two horses and two carts to fifty acres."

In the calculation of items, his saving was nearly four dollars on the cultivation of one acre, in the year. Again he says, it is admitted that one horse attached to a given weight will move it more easily than two horses attached to double that weight. This arises not only from the advantage gained by having all the power of draught close to the work but also all the power applied at the same moment which it almost impossible where two or more horses, having different wills and steps, are attached to the weight ; and for the same reason one horse will travel more quickly.

When a cart is filled there is no delay in attaching the trace-horses, during which operathe one horse would be two hundred yards on the road. I know this might be done more quickly by having men ready to change the horses, as in the practice of opposition coaches but I am speaking of the matter-of-fact working of the system. Then again, when the load is deposited, the one horse turns in much less time than the two or three. These facts are too self-evident to admit of the contradiction ; indeed, I believe the economy of carting manure with one horse carts is generally allowed, but the employment of them in harvesting is much objected to. In this respect, however, I find them equally expeditious and economical. My actual experience is, that three carts, with the harvest frames attached, will convey as much hay or corn in the straw as two wagons, and that they are bound with the ropes in the same time; therefore no time is lost in binding. They are easier to pitch into than wagons, and not more difficult to unload ; and all the advantages are gained of speed in travelling.

My attention was first drawn seriously to the subject from hiring a man to draw some stones for draining. He came with a horse only fourteen hands high and a small cart, when the work he accomplished so supprised me that I at once decided to try two light carts which after succeeding well in all other operations, I employed in the harvest field ; and being fully satisfied with them in this capacity, I soon discarded every wagon from the farm.

Lazy Beavers.

It is a curious fact, says a trapper, that among the beavers there are some that are lazy and will not work at all, either to assist in building lodges or dams, or to cut down wood for their winter stock. The industrious ones beat these idle fellows, and drive them away ; sometimes cuting of a part of their tails, and otherwise. injuring them. They only dig a hole from the water running obliquely towards the surface of the ground, twenty-five or thirty feet from which they emerge when hungry, to obtain food, returning to the same hole with the wood they procure to eat the bark. They never form dams, and are sometimes to the number of five or seven together ; all are males, It is not at all improbable that these unfortunate fellows have, as is the case with males of many species of animal, being engaged in fighting with others of their sex, and after having been conquered and driven away from the lodge, have become idlers from a kind of necessity. The working beavers, on the contrary associate males, females, and young together.

The Horse.

The general contribution of the horse and his rider is alike in many respects. Disease arising from excessive fatigue, overheating, and exposure to the air, want of exercise, improper diet, both as respects quality and quantity, and from many other causes, affects the horse and his master alike, and neglect in either case must terminate fatally. Indeed when a man or horse has acquired, by a coarse of training, a high degree of health and vigor, the skin of each is an infallible index of the fact.

It has been often remarked in England, that the skin of the pugilist, who has undergone a severe course of training, when he appears for the fight, exhibits a degree of beauty and exceeding fairness that excites the ad miration as well as the wonder of the spectators. So with the horse—his skin is the clearest evidence of the general state of his health. Even the common disease of foundering is not peculiar to the horse, but is merely a muscular affection, to which many men, who have overstrained themselves at any period are subject. The medical treatment of the horse and his rider ought to be the same.

Transplanting Trees.

We find in the Utica Gazette, facts showing that it is not necssary to select small trees for transplanting, in order to ensure their growth. Large trees may be as successfully planted as small ones. The mode and result of an experiment, made by Messrs, Pomeroy and Dutton, of Utica, are thus given : Those gentlemen transplanted trees, comprising maples, elms, beech, ect., some thirty feet in height, which were transplanted without being shorn of any of their branches. The process of removal was as follows : In the fall, before the frost, a trench was dug around the trees selected, from ten to fifteen feet in diameter, and the roots severed. In the winter, when the ground had become solid from freezing, the trees were pulled out by the aid of oxen and levers, with the mass of earth firmly attached to the roots. They were then transported erect on a strong sled, built for the purpose, and set out.

These trees grew in open land, a mile and a half from the city. They put on their foilage last spring as if wholly unconscious that they were not still in their native soil, and the enterprising gentlemen who undertook this unusual course are rewarded with shade trees which by the old practice it would have required twenty years to produce.

[This old and well known plan of transplanting should always be pursued, by those who build their houses on exposed situations, unprotected by standing trees.

Value of Birds.

Many years ago, the coffee plants, in the island of Madagascar, were attacked by a grakle a well known bird on the Africa coast. The grakle is an insect feeder, but, having used up the supply, it betook itself in pure necessity to coffee. An edict was speedily issued and carried into effect, for the annihilation of grakles, and every bird on the island was destroyed.—All went on very well for a year or two ; when, lo and behold, the insect and their larvee, having the field to themselves, began to make sad havoc upon the coffee. What was to be done? There was no alternative but that of bringing back the grakle, which was in due season imported. The coffee planters had, however gained something by experience, and they resolved to profit by the same ; they managed to keep the grakle, within bounds, and they well knew that he would do the same by the insects. And they were right. By preserving a *justo-millieu* doctrine between the two, they were enable to grow coffee.

To Cook Without Fire.

Let a utensil be strongly constructed of Tin in the shape of a small chest, 4 feet long, 4 feet broad, and 4 feet high, formed to contain a box at the top, to be closed or fastened down with a lid ; one drawer to fit tolerably close in the centre, an other at the bottom. Half fill the box at the top and the drawer at the bottom with Quicklime, and pour upon it as much as will be necessary to pulverize it by absorption ; then put down the lid of the box and fit in and nearly close the drawer. Afterwards. nearly fill the central drawer with the beefsteaks, mutton or pork chops, properly seasoned with onions, &c., without adding thereto any water ; then close it. After the expiration of eight or nine minutes, or thereabouts, the meat will be cooked, retaining all the richness of its flavor.

The age for Learning to Sing.

The earliest age, that of six or seven years says Mainzer the great music teacher is the most appropriate for learning to sing—voice and ear so obedient to external impressions, are rapidly developed and improved, defects corrected and musical capabilities awakened.—With several children a few weeks' practice suffice to change the entire character of their voices, which though a first weak and indifferent, and of almost no extent, become strong, extended, clear, and in some cases of fine quality. Such instances are best calculated to dispel the predjudices existing against musical instruction at an early age.

Wheat steeped first in strong salt water, and then in a solution of salamoniac, is said to be better prepared for sowing than by any other process.

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TO CORRESPONDENTS.

"T. S. M., of Pa."—We admit the justice of your criticism, and have only this excuse to make—that the error was not discovered until it was to late to correct it; nor can we explain how it could have passed through the hands of the editor, compositor and proof-reader, without its glaring inconsistency being noticed. There is no doubt, however, that the Water Melon was a mighty large one, and well proportioned, according to the laws which nature has established for the growth of her fruits.

"G. W., of Mass."—We cannot furnish you with No. 35, Vol. 4, not having any more of that No. on hand.

"S. B. C., of Ohio"—Can not be supplied with No. 1, Vol. 4, as we have not got it.

"D. C., of Ill."—The department is some months behind; the expense of an engraving, description, &c, would be about $10, giving two or three sectional views of the apparatus.

"A. J. B., of Detroit."—We do not think the plan of suffieient utility to merit much attention; and, besides, we have seen the same thing in a model presented to us some six weeks since, but did not think very highly of it. Persons soliciting information of publishers, should be very particular to pay postage, as it comes rather hard, to be compelled to both give advice and pay for the opportunity also,—it is like working for nothing and finding yourself, or in fact worse. As a general thing we pay no attention to unpaid letters addressed to us.

"R. P., of Mass."—We did not very well understand your communication, but in regard to the agency of your pianoforte legs, we can reply that we do not take any such agency, nor do we know of any one that would do so.

"J. M. G., of O."—There are patent machines of the kind mentioned but we do not know where they are to be found.

"H. B. W., of Charleston, S. C."—Can be furnished with Vols. 3 and 4, of this paper, bound, for $2,75 per copy.

"T. A. C., of R. I."—Your first suggestion cannot be attended to, but we shall be pleased to attend to the others, as they correspond exactly with what we had already contemplated doing. although we have but little hope of our effects being successful.

"E. P. S., of Pa."—The notice you speak of was sent you by mistake. You will receive yours to the time you name.

"E. F., of N. Y."—Your device has been tried, heretofore—there seems to be no manner of applying it without destroying that convenience which renders the present safe so admirably adapted to the wants of the business community.

"C. O. R., of Mass."—We answered your previous communication in No. 1 of this Vol. Copal varnish, blackened with lamp black and applied to the articles, after which dry them well in an oven. *Overhaul* Vol. 4, and you will find a *note* on this subject.

"G. M., of N. Y."—Naptha is used for that purpose, and also turpentine. We prefer this method of replying to your inquiries over the one you propose, as more useful and less liable to "exceptions."

"D. J. S., of N. Y. city."—Your remarks in regard to propellers have been considered; we are under the impression that the ideas are not new. This point is better determined from a drawing or model, which we shall be pleased to examine.

"S. W., of Texas."—We have been unable to find such a work as Mr. D. wants.

"D. P. of R. I."—We presume that you could see the paper-folding machine in Springfield, although the inventor spends a portion of his time in the large cities exhibiting the model. Several experiments have been made to obviate the difficulties referred to in the last paragraph of your communication, all of which have proved too expensive for general use. Your plan is, no doubt new, but we think you would scarcely be remunerated for your trouble in introducing it.

"W. R., of Detroit."—Your favor came safe—we regret that we cannot send you No. 2 of Vol. 4; we have been out of that number for a long time.

"M. B. H., of N. Y."—You say that if you "increase the size of the pinion on the line shaft, to decrease the speed one half, and then add another shaft with spur gearing to the same speed per minute as before," do you "gain any power, and how much?" There is no gain, but loss—the increased friction on the spur gearing is all loss, for no purpose. This is self-evident; mind the maxim—without decrease of speed there will be no increase of power.

"F. G. R., of Mass."—Yours has been received and will be attended to as early as possible. We are very much hurried with business.

"J. S. Y., of Mass."—We are ready and willing to answer your communications at any and all times, but beg of you to remember that "brevity is the soul of wit," which very just saying is as applicable to business communications as any other. We think your devise is patentable, but it is too complicated—simplicity being the grand desideratum in all machines, at least in so far as it is compatable with the object to be attained.

"C. O. P., of N C."—You had better send your model to Washington and have it expressed by packet to our address.

"S. W., of Mass."—Your letter of the 20th has been received and the back numbers forwarded to your address. We should like to comply with your views in relation to patent claims, but as a general thing it would injure two inventors where it benefitted one. If we did not know this to be the case, we should adopt the system.

"J. O. F., of Pa."—We have four 3 horse engines complete, with cylinder boilers, for sale at $300, 10 inch stroke and 4 1-4 inch bore, well made in every particular.

"J. H., of N. Y."—Such a glass as you refer to will cost you $5, if the focus be 18 inches; 26 or 30 inch focus $16. You perceive that a little difference in size makes a great difference in price. These glasses are warranted to be such as you describe.

"L. & I., of Boston."—The specification and drawings of your valuable invention were forwarded to the Patent Office last Tuesday. An engraving of the invention published, with a description in the Scientific American, would cost you $8, and it would be money well expended for you. It is a good invention, and you only need to get it before the public to have it appreciated.

Z. C. L., of Mass.; A. P., of N. Y.; J. B., of Va., and E. B. R., of Vt.—The specifications of your inventions have been sent to your address for signatures since our last issue.—Please execute your papers and return them back to this office as early as possible, and they will receive our further attention.

Money received on account of Patent Office business, since Sep. 18, 1849 :—

T. S. B., of N. Y., $20; I. S., of Mich, $30; H. A. F., of Mass. $10; C. N. F., of Ct., $20; Z. C. L., of Mass., $20.

ADVERTISEMENTS.

THE YANKEE BLADE,—A large and handsomely printed Weekly Journal, devoted to Literature, Art, Education, Morals, Criticism, Fun, News and Story Telling—and especially desirable to the Family Circle. Published every Saturday, at $2 per annum, in advance.

All letters, (post-paid,) should be addressed to MATHEWS, STEVENS & CO., Publishers "Yankee Blade," No. 12 School street, Boston, Mass.

N. B.—Any person desirous of receiving a copy of the Yankee Blade," as a sample, can be accommodated by notifying the publishers by letter, post-paid.

OPINIONS OF THE PRESS.

"The Yankee Blade," one of the very best papers on this continent, still remains under the editorial control of Wm. Mathews, Esq., a gentleman of rare accomplishments. The Blade is published at $2 per annum, on a large and elegant sheet.—[N. Y. Spirit of the Times.

An excellent paper, which, under the management of the able editor, Wm. Mathews, has acquired on enviable reputation as a Family Newspaper.—[Boston Mercantile Journal.

"THE YANKEE BLADE."—This most excellent paper has entered upon the ninth volume, with the same degree of interest and usefulness that has characterized it since the commencement. It is one of the most useful and interesting papers received at this office, and is read with more avidity than any other exchange. We take pleasure in recommending it to those who wish to subscribe for an Eastern paper.—[Delphi (Indiana) Times.

"THE YANKEE BLADE."—This favorite and much admired newspaper is filled as usual with sparkling with wit and humor; long may it flourish and prosper, driving away dull care from the gloomy-minded, and infusing a spirit of cheerfulness and pleasure among its numerous readers. It is published in Boston at $2 per annum, and to the lovers of light literature and original humor we can recommend it as one of the best papers in the North.—[Grenada (Miss.) Repub.

Patent Agency.

☞ From our long acquaintance and experience in Patent Office business we have no hesitancy in asserting that we are better able to judge the merits of new inventions, and are better capable of advising upon all subjects pertaining to Patents than any other concern in the United States.

Any business connected with the Patent Office may be done by letter through the Scientific American office with the same facility and certainty as though the inventor applied in person. Our prices too (another important consideration to inventors) are but about half as much as the charges of most agents, as the amount of business which we do, and that in connection with the publication of the Scientific American renders to us superior advantages over all other agents.

Having been often complimented by those who have entrusted their business in our care, we here repeat what very many have said: "The best Patent Agency in the U. States is at the Scientific American office."

All models, drawings or communications sent to the Scientific American office for inspection, are deposited from the eyes of the public until the necessary application for securing the invention has been made.

The best of artists are constantly employed to make drawings from models, and our corps of specification writers are composed of gentlemen formerly connected with the Patent Office at Washington as examiners.

All communications should be addressed to
MUNN & CO., Scientific American Office,
POST PAID. (d16) New York.

DAGUERRIAN MATERIALS.—JOHN ROACH, Optician, 79 Nassau st., N.Y., is manufacturing American Cameras of imported Flint Glass, which are warranted equal to any. Also, on hand, Voightlander Cameras. Plates, Cases, Chemicals, &c. Galvanic Batteries for gilding and silvering. Electro Magnetic Machines for medical purposes. Thermometers wholesale and retail. Object Glasses of various sizes, ground to order and warranted achromatic. 2 10*

LITERARY "CORNER STONE."—"Once possessed of a work so able, copious, and scientifically constructed, as WEBSTER'S QUARTO DICTIONARY, one discovers a hundred benefits previously unthought of. Old uses and new uses, and disuses and abuses,—old terms, and new terms, and the history of the rise and progress of terms,—together with apt citations, pointed and sparkling,—with other benefits I need not attempt to enumerate,—combine to make him feel the work a desideratum—to lay it as a corner stone in his library. Or rather—since corner stones are not often disturbed—as a janitor—a librarian,—ever at his post, ready to converse on whatever topic is at hand."
July, 1849. CHARLES BEECHER.
Published by G. & C. MERRIAM, Springfield, Mass., and for sale by all Booksellers. 2 2*

LAW'S NEW PLANING MACHINE—For boards and plank, is now in operation in this city—planing, tonguing and grooving at the same time, with rapidity and beauty. It is believed to be superior to any other machine, as it will do the work of two or three rotary machines, and for all Southern, and the majority of Northern lumber, the execution is much better.

Machines, with rights for States, or Counties, can be had by applying to the subscriber, at 216 Pearl street, or at Collyer & Dugand's mill, foot of West Fourteenth street, where the machine is at work.
2 tf H. LAW.

DANIELS' PLANING MACHINES—Manufactured by BALL & RICE, successors to Thomas E. Daniels, Worcester, Mass. All orders promptly attended to, and at such prices as cannot fail to give satisfaction to all who may favor us with their business.. 2 3m*

STEAM ENGINES FOR SALE.—A number of Steam Engines, of one, three and five horse power, will be sold cheap, at No. 2 Bethune st., N. Y. They are all made of the best materials, compact, and well put together, and can be seen running. This affords a good opportunity to those who wish to purchase. Address J. WILEY, as above.
2 3*

THOMAS E. DANIELS' PLANING MACHINES—Manufactured by HOWE, CHENEY & CO., Worcester, Mass. All orders for the above machines executed at short notice and satisfactory prices. 2 4m*

TO PAPER MANUFACTURERS.—A gentleman who was bred a Papermaker, and who has carried on the business 10 years himself, and for the last 4 years has been engaged as foreman for a large manufacturer in Massachusetts, is thoroughly acquainted with manufacturing all kinds of paper, and with all the modern improvements, and can produce the best of reference, wishes for a situation as foreman in a papermill, in one of the Southern or Western States. A line addressed to L. A. FLETCHER, Lowell, Mass., will receive prompt attention.
1 4t*

PHILOSOPHICAL AND CHEMICAL APparatus for Colleges and Schools, and Engineering Instruments.—JAMES GREEN. 175 Broadway, New York, and 43 South street, Baltimore, Manufacturer and Importer of every kind of Philosophical and Chemical Apparatus, and Optical and Mathematical Instruments. Barometers, thermometers, telescopes, Drawing Instruments, pocket Compasses, &c. wholesale and retail. Experimental Apparatus and Models made to order. 1 3m*

MACHINERY.—Messrs. NORCROSS & CO., Agents for the purchase and sale of Machinery, have transferred their business to the subscriber, who offers his services in said line at 43 Fulton street, New York. SAMUEL C. HILLS,
1 4t Machinery Agent.

S. C. HILLS, NO. 43 FULTON STREET, has constantly for sale—

Steam Engine 3 to 20 horse power, at from $200 to $1250—good horizontal engines—deliverable here or in Philadelphia.

Steam Boilers for the same, say Bentley's patent, or common cylinder, at lowest prices.

Engine Lathes 5 feet $170; 7 feet $180; 10 feet $200 each, with gear for cutting screws, $45 additional.

Iron Planing Machines, to work by hand, $100.—Also hand Lathes, Drills, &c.

The above Machinery will be warranted. Letters must be post paid. a11 8t

GUN FOR SALE.—A fine sporting Shot Gun, of English manufacture and of superior finish, for sale at this office. It belongs to one of the proprietors of this paper and will be sold for $25; it is nearly new and cost $50. Address "Scientific American."

Z. C. ROBBINS,
CONSULTING ENGINEER AND COUNSELLOR FOR PATENTEES.
Office on F street, opposite Patent Office, Washington, D. C. j20 tf

SUPERIOR TURNING LATHES.—James Stewart, 15 Canal st., and 106 Elm st. is constantly manufacturing and has now on hand between 50 and 60 superior Lathes of the following descriptions and at reasonable prices, namely:
Dentist's Lathes, very highly finished.
" " common,
Brass and Wood Turner's Lathes.
Jeweller's and pencil-case maker's, very superior.
J. STEWART is also authorized to act as agent for the sale of the celebrated Lathes manufactured by James T. Perkins of Hudson, of large size and at prices from $250 to $800. A specimen of this description may be seen at his factory as above. j27 tf

TO MANUFACTURERS OR CAPITALISTS ABOUT TO COMMENCE THE MANUFACTURE OF COTTONS.—The subscriber, brought up with Messrs. Samuel & Jno. Slater, at operating and building cotton machinery, and for the last twenty years has travelled through several of the United States, setting up and building, on the most approved plans of modern invention, now offers his services as Superintendent, and is ready to introduce a new system, greatly reducing the cost of manufacture, and at the same time making better goods than ever was in the market. Please direct, post paid, to G. W. HOWARD, 228 Eddy street, Providence, L. I. 49 2m*

FAIRMAN'S PATENT UNIVERSAL CHUCK, FOR LATHES.—Oliver Snow & Co.'s Hand Planing Machines, also Lathes for dentists, Jeweller's, Wood Turners, &c. Lathe Wheels, Bands, Hooks and Eyes, Circular Saws, Saw Mandrill's and every other description of Tools for Machinists, Carpenter's, Coachmakers, &c., constantly on hand at WOOD'S old established Tool store, corner of Chatham and Duane streets, New York.
Planes made to order and warranted.
Carpenters' and amateurs' Tool Chests, &c. 49 3m*

BRITISH PATENTS.—Messrs. Robertson & Co., Patent Solicitors, (of which firm Mr. J. C. Robertson, the Editor of the Mechanics Magazine from its commencement in 1833, is principal partner,) undertake THE PROCURATION OF PATENTS, for England, Scotland, Ireland, and all other European Countries, and the transaction, generally, of all business relating to patents.

Instructions to Inventors can be had gratis, on application to Mr. THOMAS PROSSER, 28 Platt street, New York; as also the necessary forms of Petition and Declaration for British Patents.
PATENT OFFICE,
m1 tf 166 Fleet street, London.

JOHNSON'S IMPROVED SHINGLE MACHINE.—The subscriber having received letters patent for an improvement in the Shingle Machine, is now ready to furnish them at short notice, and he would request all those who want a good machine for sawing shingles, to call on him and examine the improvements he has made, as one-eighth more shingles can be sawed in the same given time than by any other machine now in use. Manufactured at Augusta Maine, and Albany, New York. J. G. JOHNSON.
Augusta, Me., Oct. 28, 1848. o28 1y

LAP WELDED WROUGHT IRON Tubes, for Tubular Boilers, from 1 1-2 to 8 inches in diameter.—These are the only Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France, and Germany, for Locomotive, Marine and other Steam Engine Boilers.
THOMAS PROSSER, Patentee,
m1 28 Platt street, New York.

TO INVENTORS.—The subscriber begs leave to inform inventors and others that he manufactures working models of machinery &c. in a neat workmanlike manner. Patterns of every description made for Castings. Scroll sawing neatly executed.—Mathematical and Nautical Instrument Cases of every description. JOSEPH PECKOVER, 240 Water street N.York, (between Beekman st. and Peck Slip.)j30 3m*

PATENT AGENCY.—SAMUEL C. HILLS, No. 43 Fulton street, New York, Patent Agent and agent for the sale of Patent Goods and Patent Rights—still continues to aid and assist inventors in procuring Patents and selling Rights. Charges moderate. Applications per mail must be post paid.m26 tf

DOG POWER MACHINERY.—For Sale, three fine Newfoundland Dogs, trained in the most complete order, they require no tieing in, but obey the commands of their master; likewise the Drum, 10 feet in diameter, which is all put together with bolts and screws, and can be taken to pieces and packed in a small compass. To farmers for churning, pumping water, cutting straw, &c., or for any light mechanical purposes, this is a rare chance, a full description of which is given in the Scientific American, No. 8, Vol. 4. For particulars apply, if by letter, pp. to JOS. PECKOVER, 240 Water street. 50 4*

ADEE'S AMERICAN CAST STEEL Works, (at the foot of 24th st., E. River, N. Y.) The above works are now in successful operation, and the proprietor would respectfully call the attention of machinists and all consumers of the article to an examination of his Steel, which he is warranted by the testimony of the principal machinists and edge tool makers of this city, in recommending as fully equal in every respect to any ever used in this country.
A full assortment of the different sizes constantly on hand, which the public are respectfully invited to call and examine at the office of DANIEL ADEE,
51 6ms 107 Fulton street, New York.

BLAKE'S PATENT FIRE PROOF PAINT, from Ohio, which in a few moments turns to slate or stone, protecting whatever covered from the action of the weather and from fire. Purchasers should be particular and see that every barrel is marked "Blake's Patent Fire Proof Paint," as there is any amount of worthless counterfeit stuff in the market, called fire proof paint. The genuine article for sale by the patentee, at No. 3 Broad st, N. York.
51 12* WILLIAM BLAKE.

NOTICE.

☞ The Second EXHIBITION of the MARYLAND INSTITUTE for the Mechanic Arts, will be held at Washington Hall, in the City of Baltimore, from Thursday, 27th of September, to 18th October, inclusive. Machines, models, or goods sent to the address of H. Hazelhurst, Corresponding Secretary of the Institute, (expense paid) will be met with immediate attention, and every facility used to exhibit the same to the best advantage. j16 4m

MACHINERY, &C., FOR CLOTH AND OTHER MANUFACTURERS.—One shearing Machine, with extra spiral and iron frame, two yards wide, made by R. Ralston, Glasgow; 1 Power Loom, 1 Card cutting machine, 1 crimping ditto, 1 Jacquard ditto; also Reeds, Shuttles, Press Boards, &c., for sale low, by J. C. ERNENPUTSCH, 1 Pine street, near Broadway. 50 4*

BARLOW & PAYNE, Patent Agents and Consulting Engineers, 89 Chancery Lane London
m12 tf Patent Journal Office.

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Scientific Museum.

Manufacture of Black Lead Pencils.

The best pencils of this kind are made from a natural ore, but there are other kinds made of plumbago dust and antimony. The lumps of pure plumbago, when scraped from dirt, are generally of an irregular form, not of a large size. These lumps are cut into thin slices by a circular saw, each slice being sawn by a guage to its proper thickness. The saw runs vertically and the plumbago is fed below it, the workman gradually raising it, until the slice is cut off, where it falls down slice upon slice of different sizes, upon a table below. One edge is then made straight with a shaving tool, and it is then fit to be inserted into the wood. The wood is cedar, in half squares cut by a circular saw into the lengths of the pencil. A groove is cut by a proper guage plane into one side of the wood square, and the workman takes a piece of the cut plumbago, with its edge made straight, and dips it into strong glue and then inserts it into the groove, and then with a very sharp instrument makes a slight cut at each end and gives the plumbago a slight snap, when it breaks off with a clean straight edge. This is again dipped in the glue and operated like the other piece until the whole slice is used up or the pencil groove filled, when the whole surface is smoothed along and the two pieces are firmly glued together, forming a rough square pencil.

To make it round, it is first forced through a square hole in a steel puppet, by the workman; and on the other side of this puppet, there is a small planing tool revolving on a centre, with two guages on it, to turn it round and to the exact size. As soon as the end of the pencil projects from the finishing guage of the cutters, it is forced into a circular hole in a steel plate, through which it is drawn with a pair of wooden nippers, and it comes out beautifully round polished. It is polished by the outer end of the circular hole being smaller than the inner, which thus compresses and polishes the wood.

EVER POINTED LEAD.

The round pieces of lead for pencil cases are first sawed into small square pieces, and they are then made round by forcing them lengthways through three circular holes of different sizes cut in pieces of ruby. In passing through the first hole, only the four angles of the prism are cut off, and it is then octagonal, the next hole is smaller and it takes off these eight angles and it then becomes a prism of sixteen sides; and in the next passage through the small hole, it is made perfectly round. The plumbago is fed into the ruby by being laid on a groove in a piece of metal, with a steel pin to keep the plumbago from being pressed back.

The Difficulty of Navigating the Air.

No body can float in the air unless it be eight dundred times lighter than water; such a body therefore, must of course cary 800 times less power than might be used in a steamboat.—But the utmost power that a steamboat can carry will not enable it to make the least headway against wind blowing 200 miles an hour. How then is it possible for a body of 800 times less power to make any headway against even a gentle wind blowing three miles an hour?

In navigating the air we can obtain no fulcrum but the air itself, and that is yielding, and but a small portion of even the power which can be carried could prove effective.

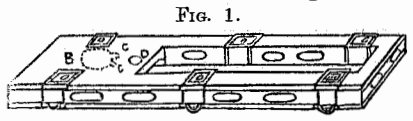
If a body, so comparitively solid as water, causes a loss of power, the loss must be vastly greater in a body eight hundred times lighter and exceedingly elastic. When to all this we add eight hundred times less power than a steamboat, and at the same time bear in mind the further fact that a steamboat cannot make the least headway against wind blowing two hundred miles an hour. It is no go.

Saturn and Her Ring.

Well, us New Yorkers must be a set of star-gazers. No sooner was it announced by one of our papers that the largest opening of the ring of Saturn could be seen during the evenings of last week, than a huge telescope was mounted in Broadway, right on the pavement, and through it, the learned and unlearned beheld wonders. This is a kind of speculation that we commend.

Hollow Iron Moulding.

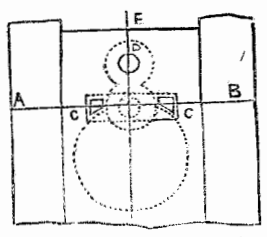
Fig. 1.



For large castings the bed of sand which forms the floor, is used for constructing the moulds. In the accompanying engravings we will illustrate the bed plate of a non-condensing steam engine.

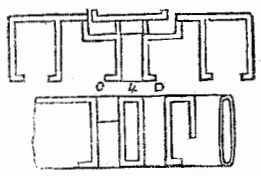
Figure 1 is a narrowed outside view of the plate, showing the upper surface. It is made to support six columns, surmounted by an entablature; B is a platform for supporting the cylinder. It is stiffened with a deep flange at the edge. The position of the cylinder is indicated by the dotted lines; C C are the apertures for the steam passages, and they are joined into one short branch pipe below the platform; D is a circular passage for the steam into the valve chest—it projects downwards to the level of the mouth of the steam eduction

Fig. 2.



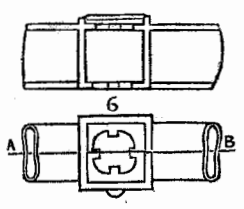
passages, both terminating in a large flange connecting the respective pipes leading to them. Fig. 2 is a plan of part of the sole plate, including the steam ways. Fig. 3 is a vertical section of the sole and the eduction passage at the line A B, fig. 2. The steam passage is dotted in behind it. Fig. 4 is another vertical section of the same, at the line E, fig. 2, showing the section of both the passages, C D. Fig. 5, is a vertical section of fig. 6, which is another portion of the sole, showing the foundation for a column, fig. 5, being the section at the line A B, fig. 6. The sole is hollow within, and possesses the form of the section shown in fig. 3, all round, interrupted only by the sockets for the feet of the columns. In casting, the general plan is to dispose of the moulding so as to have the

Fig. 3.



heaviest parts undermost. The sole plate is for the most part entirely open on the under side, as shown in fig. 3. Externally the sole plate is not open like the under surface. Nor are the oblong blank spaces shown in the sides executed in the pattern, its cross section is a complete four sided figure. This form of pattern leaves in the sand a plain open space of the same breadth as itself. Cores of sand of the same internal void, must therefore be introduced into the moulding to complete the figure of the casting, but this we will explain in next number.

Fig. 5.



For heavy casting a greater quantity of coal dust is required, but the exact amount must be determined by an experienced hand. Too much coal prevents a sharp outline of the pattern. This is caused by the repelling power of the gas evolved during the liquidity of the metal. On the other hand, if there is too little coal dust, the molten metal burns through it combines with the sand and produces a rough surface.

To make Tea Lead into White Lead.

Take tea lead, place it in a suitable cast iron pan and expose it in a melted state to a slow curent of heated air. This has the effect of seperating the tin that is in it which then floats upon the surface of the melted lead, from whence it is removed by the workman from time to time. When the lead has been operated upon sufficiently long to extract the whole of the tin, it is then to be removed by running it out, or by other convenient means, and then cast into moulds. The workman can with facility tell when the lead has been sufficiently operated upon by being, when cold, easily scratched with the finger-nail. The tin in this process will be found to have mixed with it a small quantity of oxide of lead. In the manufacture of white lead from the tea lead thus treated, and which is now particularly pure for the purpose, the lead is reduced (in a metallic state) into a very fine state of division, by dropping it when melted into a tub of cold water, and in this state operated upon by either acetic or nitric acid, either mixed or alone, and diluted with an equal weight of water, or by a solution of acetate or nitrate of lead, either mixed or alone, but containing an equal quantity of acid as the preceding, and used with steam, hot air, and carbonic acid gas. By constructing a tight frame or brick chamber with a number of shelves covered with sheet lead, another plan may be used, viz., to spread the granulated lead upon the shelves to be submitted to the action of carbonic acid, which is admitted to the space between the shelves by suitable pipes; other pipes convey steam or hot air for mantaining the apparatus during the processs of a high temperature.—Steam is occasionally admitted to the lead during the operation, for the purpose of keeping it in a proper state of moisture. At the expiration of about fourteen days the lead will be found sufficiently carbonated.

The sulphate of copper (blue vitriol) is said to be a good preparation for seed wheat. It should be used in a strong solution, like the salt solution, strong enough to support an egg.

In threshing, the best wheat is thrown farthest by the machine.

The Queen's Dictionary.

The Messrs. Merriam, some time since, transmitted to Queen Victoria, through the hand of Geo. Bancroft, the American Minister, a magnificently bound copy of their unbridged edition of Webster's Dictionary. It was given to the Queen, through her husband, Prince Albert, and its receipt has been acknowledged by the Secretary of His Royal Highness. The acknowledgment is of course directed to His Excellency, the American Minister, and we have the pleasure of presenting it to our readers.

Sir—I have the honor to inform your Excellency that Her Majesty, the Queen, has accepted, with great pleasure, the copy of the last edition of Webster's English Dictionary, which, according to the directions you gave me, was laid by me before His Royal Highness Prince Albert, and was presented afterwards by the Prince to Her Majesty, on the part of the publishers, Messrs. Merriam; and I have been commanded to express to your Excellency, and to beg of you to transmit to Messrs. Merriam. Her Majesty's gracious thanks for this beautiful present, which Her Majesty highly values, not only on account of the great merits of the work itself; but still more so, as a sign of those feelings towards Her Royal Person on the part of a large portion of the Anglo-American nation, which your Excellency informed me it was intended to represent, and which, after the political disunion which has taken place between the United Kingdom, and the United States, could not indeed have found a more appropriate way of expressing themselves than the presentation to her Majesty of a work on the English language, which directly refers to that powerful and indissoluble bond by which the two cognate Nations on the Eastern and Western side of the Atlantic will forever remain united. Your Excellency, as well as Messrs. Merriam, will no doubt feel great pleasure in learning that her Majesty has placed the work presented through your Excellency, amongst the few selected volumes which compose her own private Library.

I have the honor to be, sir, your Excellency's faithful servant, C. Meyer,

Sec'y to H. R. H. Prince Albert.

Buckingham Palace, June 20th, '49.

His Excellency, the American Minister.

LITERARY NOTICES.

The October number of Godey's Lady's Book has been laid upon our table by Messrs. H. Long & Bro., 43 Ann street, Agents for this city. It is superbly illustrated with 15 original engravings, the most prominent of which are, "The Father's Grave," by Ellis, "Brother and Sister," by Coe; also a portrait of Fredrika Bremer, accompanied by a biography from the pen of Mary Howitt. Among the contributors we notice the names of H. Hastings Weld, W. Gilmore Simms, T. S. Arthur, Grace Greenwood, Mrs. Ellet and Miss Leslie, beside a host of other merited writers. Godey is unrivalled in the literary world.

Sartain's Union Magazine, for October, comes to us through Messrs. Dewitt & Davenport, Tribune Buildings. The principal engravings are executed by the proprietor, Mr. Sartain, who stands without a rival in this art. This number is a splendid one, and reflects credit upon its enterprizing managers. The contributions are of a high and sterling character.

The October number of Graham's Magazine has been sent us by W. H. Graham, Brick Church Buildings, this city, and is a very beautiful and richly embellished number, the most prominent of which are "Effie Deans," "Rose Carlton," and "The Baggage Wagon," a very striking and effective picture. The contributions are of a very sterling character. This Magazine is not excelled in point of merit by any, and should meet a large sale, it has already reached its seventeenth year.

Peterson's Ladies' National Magazine, for October, is not inferior in point of interest to any previous number. Mr. Gross has done himself credit in the engraving of "The Offer," and the literary character of this Magazine is unexceptionable. Terms $2 per annum. Published at Philadelphia. Dewitt & Davenport are Agents for New York.

Holden's Dollar Magazine, for October, has made its appearance. The success of this work is established beyond peradventure, and will be continued by the person who has had the control of it in Mr. Holden's absence, he having become the legal proprietor on the death of Mr. Holden. We are assured that no pains or expense will be spared to render it worthy an extensive patronage. The present number indicates an improvement in the literary character of this journal.

The Banker's Magazine, for September, contains much valuable information. Its miscellany of important cases, relating to banker's business, is very valuable. It contains a splendid article on "The Intellectual Occupations of Business Men."

TO INVENTORS AND MECHANICS.

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It is printed with new type on beautiful paper, and being adapted to binding, the subscriber is possessed, at the end of the year, of a large volume of 416 pages, illustrated with upwards of 500 mechanical engravings.

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A PRESENT!

To any person who will send us Three Subscribers, we will present a copy of the PATENT LAWS OF THE UNITED STATES, together with all the information relative to PATENT OFFICE BUSINESS, including full directions for taking out Patents, method of making the Specifications, Claims, Drawings, Models, buying, selling, and transferring Patent Rights, &c.

N. B.—Subscribers will bear in mind that we employ no Agents to travel on our account; a list of our local agents will be found in another column—all of whom are duly authorized to act as such, and none other.

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